
Prepared for

State of Washington
Legislative Transportation Committee

January 1992

Final Report

Volume IV: Recommendations

Programming and Prioritization Study

Prepared by



Cambridge Systematics, Inc.

with

Wilbur Smith Associates

Prepared for

State of Washington
Legislative Transportation Committee

January 1992

Final Report

Volume IV: Recommendations

Prepared by

Cambridge Systematics, Inc.

with

Wilbur Smith Associates

Table of Contents

Volume IV: Recommendations

1.0 Introduction.....	1-1
2.0 Motivation for Change.....	2-1
2.1 Assessment of Existing Process.....	2-1
2.2 Objectives of an Improved Process.....	2-4
2.3 Range of Alternatives.....	2-5
3.0 Recommendations.....	3-1
3.1 Summary of Recommended Programming Process.....	3-2
3.2 Description of the Proposed Programming Process.....	3-3
Policy Direction.....	3-6
Program Structure.....	3-8
Needs Analysis.....	3-13
Target Funding Levels.....	3-18
Project Identification.....	3-24
Project Evaluation and Ranking.....	3-27
Initial Program Development.....	3-28
Program Evaluation.....	3-30
Final Allocation.....	3-33
Program and Performance Monitoring.....	3-33
Interjurisdictional Coordination Recommendations.....	3-36
3.3 Comparison of Existing and Proposed Process.....	3-38
3.4 Decision-Making Roles.....	3-38
4.0 Implementation Process.....	4-1
4.1 Legislative Changes.....	4-1
4.2 Administrative Changes.....	4-3
4.3 Next Steps and Schedule.....	4-3

List of Tables

Table 2.1	Range of Alternatives.....	2-8
Table 3.1	Improvement Program – Subcategories.....	3-12
Table 3.2	Example Needs/Deficiency Criteria – Improvement Program.....	3-19
Table 3.3	Example Project Evaluation Criteria.....	3-29
Table 3.4	Example Program Performance Measures.....	3-32
Table 3.5	Comparison of Existing and Proposed New Process.....	3-39

List of Figures

Figure 1.1	Focus of Programming and Prioritization Study.....	1-2
Figure 2.1	Existing Programming Process.....	2-2
Figure 2.2	Programming Options Matrix.....	2-7
Figure 3.1	Recommended Programming Process.....	3-4
Figure 3.2	Maintenance and Preservation Needs.....	3-16
Figure 3.3	Program and District Target and Funding Levels.....	3-21
Figure 3.4	Improvement Program Target Funding Levels.....	3-23
Figure 3.5	Relationship of Program Evaluation and Program/Performance Monitoring.....	3-35
Figure 3.6	Program Decisions – Recommended Roles in New Process.....	3-42
Figure 4.1	Implementation Process.....	4-4

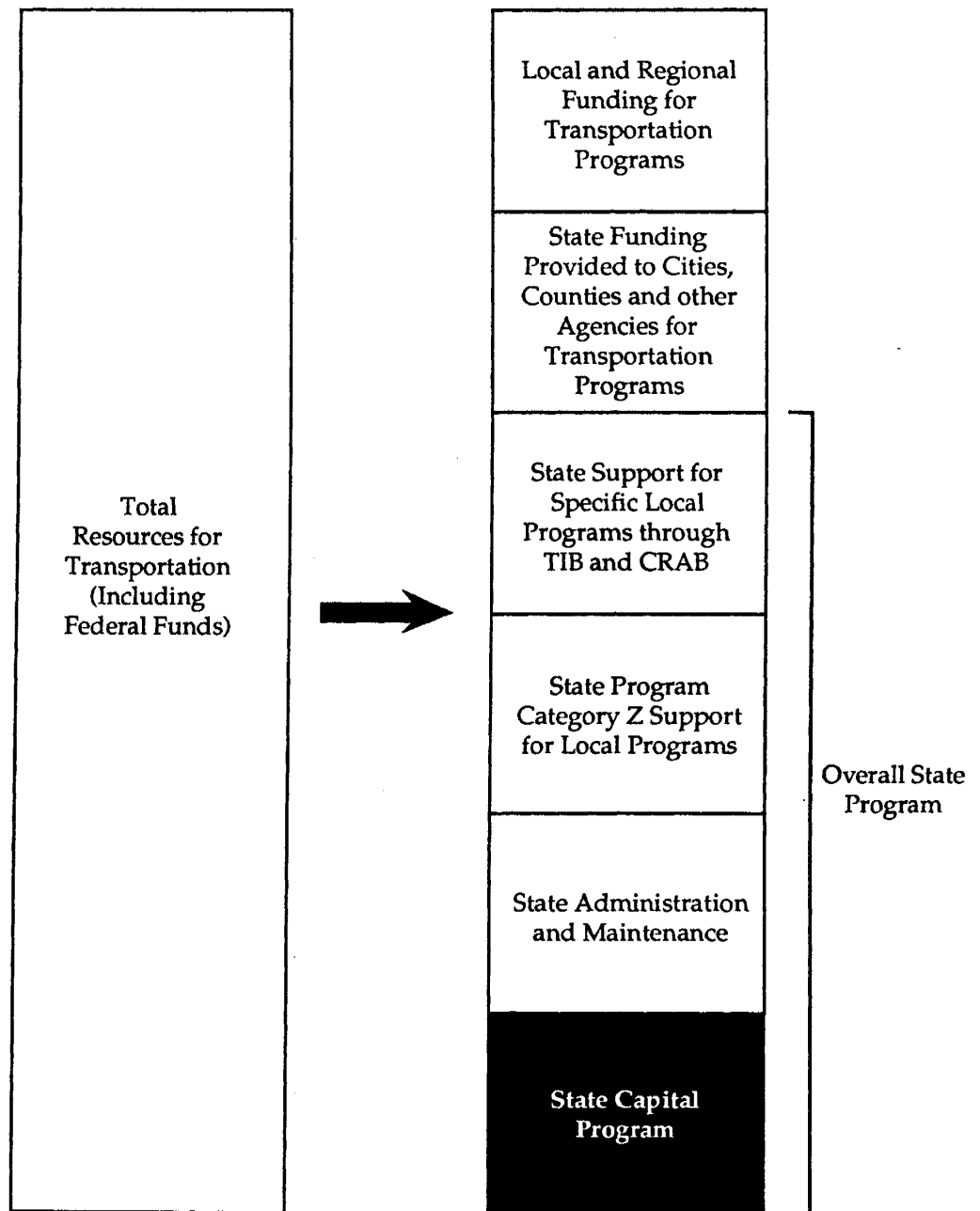
1.0 Introduction

1.0 Introduction

This volume of the final report documents the recommendations for changes to the state's highway programming and prioritization process. The recommendations build directly upon the detailed evaluation of the state's current process, and case studies of programming processes in selected local jurisdictions. These more detailed findings are presented in Volume II (State Process) and Volume III (Local Case Studies) of the final report.

As illustrated in Figure 1.1, the primary focus of this study, the state's capital program for the state highway system is just one element of the total resource allocation process that determines how funds are spent on transportation. Local and regional funding sources (including private sector contributions and Federal transit assistance) provide resources for local and regional highway and transit programs. A portion of state fuel and motor vehicle fees are provided directly to cities and counties to support local programs. The Transportation Improvement Board (TIB) and Country Road Administration Board (CRAB) also provide state support to local programs and state program Category Z supports local programs by providing both funds and technical assistance. Finally, the state administration, maintenance and capital programs focus resources on the state transportation system.

While the programming processes of a selected number of cities and counties were reviewed as part of this study, the objective of the local analysis was to identify desired changes to the state process from the local

Figure 1.1 Focus of Programming and Prioritization Study

■ Focus of the Programming and Prioritization Study

perspective and to understand how changes at the state level might affect local governments. No recommendations for changes to local programming methods were developed as part of this project.

However, as reflected in Figure 1.1, it should be recognized that the state's capital program is but one element of an overall resource allocation process that determines state and local priorities and expenditures on transportation. Implementation of the recommendations of this study do not require changes in other elements of this resource allocation process, but could serve as a starting point for a review of these other elements.

2.0 Motivation for Change

2.0 Motivation for Change

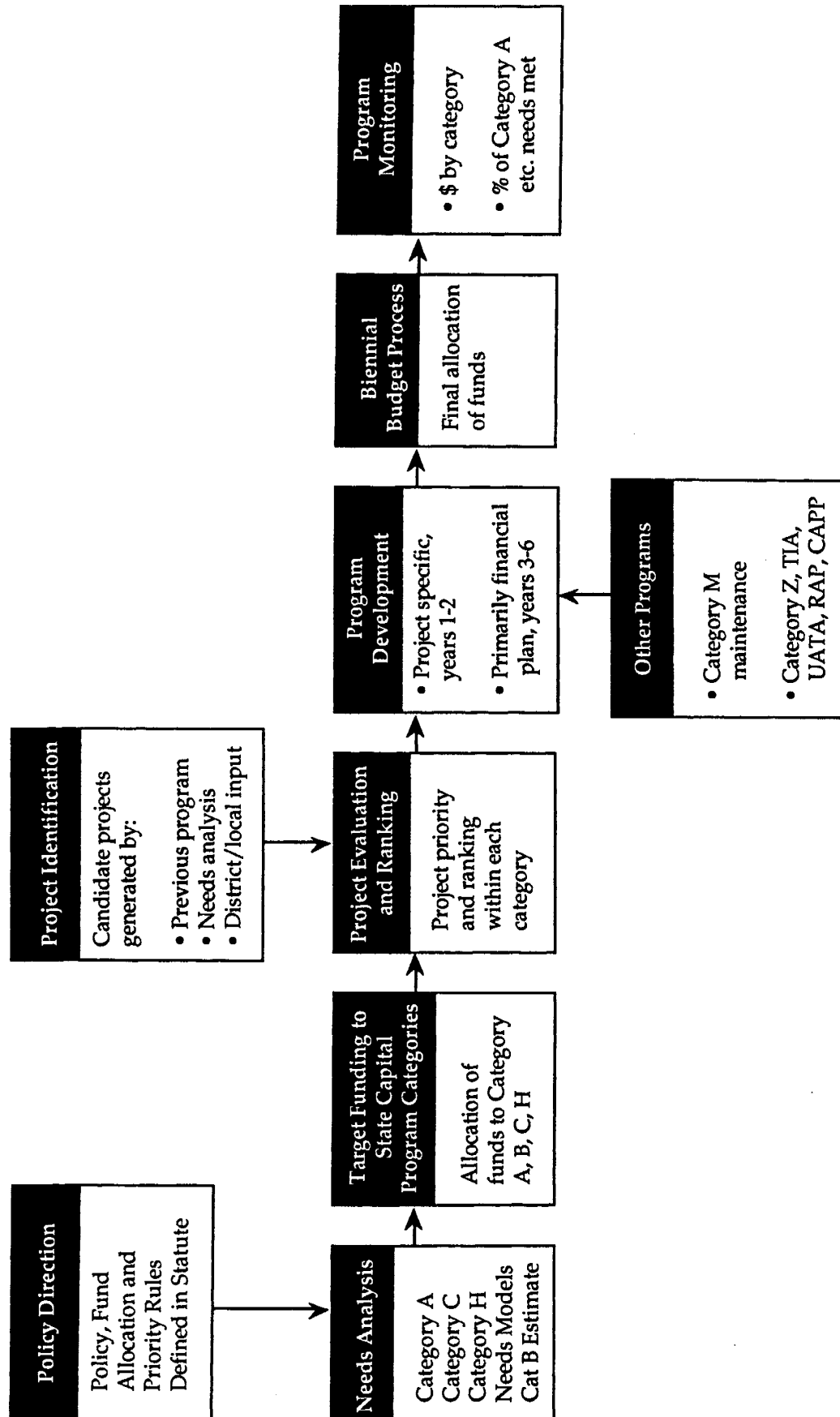
The detailed findings of this project are presented in Volumes II and III of this final report. The purpose of the discussion presented here is not to repeat these findings in detail but rather to summarize the key issues and conclusions concerning the existing process which have led to the recommendations for change presented in Section 3.0. The specific objectives which the changes are designed to meet and the range of alternatives that were considered in developing specific recommendations are also discussed.

■ 2.1 Assessment of the Existing Process

The state of Washington has been a leader (at both the state and local levels) in developing an explicit and structured highway programming process and the technical methods to support it. Figure 2.1 summarizes the key steps in this process that were examined.

In general, the current process is consistent with good programming practices, and compares favorably to many other states. Needs analysis and priority criteria generally reflect current statutes, which place a clear emphasis on preservation and accident reduction as overriding policy goals. Criteria used to define physical preservation needs and design standards are reasonable and generally consistent with good practice.

Figure 2.1 Existing Programming Process



The current state process provides strong assistance to local governments through state Category Z and the Transportation Improvement Board and County Road Administration Board programs. These programs all enjoy very strong local support (based on interviews with selected local officials). While this is not meant to imply that all local transportation needs are being met, Washington has established a strong and positive state-local partnership.

However, a number of changes have been occurring which make it necessary to re-examine the current process:

- The policies and strategies to be addressed by the highway program have become increasingly complex and diverse, with more of an emphasis on management of existing capacity and multimodal solutions.
- State legislation dealing with growth management, demand management and air quality, as well as a new system planning process being implemented by the Transportation Commission and WSDOT all place emphasis on a strengthened regional decision-making process for transportation. The programming process will need to reflect this trend as the institutional arrangements for effective regional decision-making evolve over the next few years.
- The recently passed Intermodal Surface Transportation Efficiency Act provides new funding flexibility which creates an opportunity for states to examine a broader range of trade-offs for the use of Federal and state resources and better focus programs to address each state's needs and priorities.

Therefore, the programming process was evaluated with respect to its ability to function in this increasingly complex policy and institutional environment. Key findings are:

- The existing process makes it difficult to develop a clear linkage between the full range of policy objectives and programming decisions because consistent criteria are not used for establishing policy objectives, defining needs, and identifying and evaluating candidate projects.
- Criteria used to evaluate projects and set priorities provide an objective basis for comparing projects, but do not encourage consideration of the full range of available transportation solutions and do not place sufficient emphasis on the benefits or output of specific projects.
- There is no explicit linkage between needs analysis and the specific projects identified for funding which makes it difficult to measure and communicate program goals and accomplishments.

- The existing process does not explicitly examine the key investment trade-offs and choices facing the state or put sufficient emphasis on measuring and reporting on program accomplishments and results.
- An emphasis on preservation and accident reduction is reflected in funding priority to Category A, and in the needs and priority criteria used. However, the existing program structure makes it difficult to identify the total resources devoted to highway and bridge preservation since facility preservation is included as part of Categories A, B, H and M.
- There is no clear and explicit linkage between many of the policy objectives in the State Transportation Policy Plan (e.g., personal mobility, economic development, growth management, environmental protection, etc.) and the existing programming process.
- The requirements and policy objectives reflected in more recent state and Federal legislation concerning growth management, demand management and air quality also are not fully reflected in the current programming process.

In summary, the existing process clearly reflects the policy environment that existed when much of the current approach was developed and implemented. However, a new and emerging set of policy issues are confronting the state now and some changes to the current process are required to deal explicitly with these concerns.

■ 2.2 Objectives of an Improved Process

While the current programming process has served the state well, there are a number of issues that need to be addressed that suggest changes to the process for the future. The three key objectives which these changes should address are:

- **Policy Issues.** Establish a strong and clear connection between the programming process and the full range of emerging policy concerns.
- **Trade-Offs.** Strengthen the ability of the process to highlight and evaluate key trade-offs and choices in the use of funds.
- **Accountability.** Improve the accountability of the programming process by defining clear goals and measuring and reporting program accomplishments and performance.

In terms of policy issues, system preservation and accident reduction are clearly reflected in the current programming process and should continue to be key policies guiding the program in the future. However, policy concerns related to growth management, personal mobility, economic development, and environmental protection, as discussed in the State Transportation Policy Plan, are not explicitly reflected in the current process.

It must be recognized that there may be conflicts between different policy goals. The relative importance of particular policy issues or the most effective way to address them will vary from region to region within the state. Thus the programming process should encourage consideration of the full range of transportation solutions (major capital investment, operational/management, transit and multi-jurisdictional) and recognize that the policy issues of most concern, or the appropriate balance between meeting different policy objectives, may change over time.

The programming process should highlight and evaluate key trade-offs and choices in how funds can be spent. In many cases, the appropriate balance between different policy concerns can not be established until the implication for how funds would be spent and what could be accomplished are known. The programming process (and the state's new system planning process) must assist decision-makers in evaluating key investment choices.

Improving the accountability of the existing process is essential if all of the participants in the decision-making process (Legislature, Governor, Commission, WSDOT, local government and regional agencies) are to understand how policy issues are being addressed and what the program is accomplishing. A clear connection should be established between the full range of policy goals, program objectives and the measurement of program performance.

■ 2.3 Range of Alternatives

To address the objectives identified, a range of changes to different elements of the existing programming process were considered. In addition, a number of different overall process alternatives were discussed which represented varying degrees of accomplishing the objectives. The purpose of this section is not to document all the possible variations considered in developing the recommendations but to provide some sense of the range of alternatives and how they were structured.

Figure 2.2 illustrates a programming options matrix which arrays the key elements of the programming process and the objectives discussed in the

previous section. For each element of the process a range of potential changes were identified that could address one or more of the objectives. Finally, a set of consistent changes to all elements of the process that addressed all the objectives was developed. In some cases, changing a particular element of the process required changing other elements as well. For example, a change in the definition of program categories might require changes to the existing Category A, C, and H needs models. Similarly, changing the range of policy issues that the process responds to also requires changing project evaluation criteria.

Table 2.1 describes some of the alternatives that were considered for each element of the process to reflect the objectives shown in Figure 2.2. This table indicates the types of changes that were discussed in developing a more specific and detailed set of recommendations. One alternative considered for each element was to retain the current method.

Figure 2.2 Programming Options Matrix

Objectives	Elements of the Programming Process								
	Policy Direction	Program Categories	Needs Analysis	Target Funding Levels	Project Identification Process	Project Evaluation Criteria	Project Ranking Method	Program Evaluation	Program and Performance Monitoring
Reflect new and emerging policies <ul style="list-style-type: none"> • Provide explicit guidance for all policy concerns • Increase flexibility to respond • Encourage full range of transportation solutions 									
Highlight key trade-offs and choices <ul style="list-style-type: none"> • Explicitly examine alternative objectives or performance goals • Measure project and program benefits and output • Allow funds to be shifted between program categories, districts, etc. 									
Increase accountability <ul style="list-style-type: none"> • Define clear performance measures • Monitor system conditions 									

Table 2.1 Range of Alternatives

(1) Policy Direction

- **Statute.** Statute provides strong guidance to the existing process for the preservation policy and this could be extended to other policies as well. However, the appropriate balance between various policies would be hard to define completely in statute.
- **Budgetary Process.** Could be used more strongly as a mechanism to review policy directions and goals and program accomplishments.
- **Explicit Planning Documents or Activities.** Policies as defined in the State Transportation Policy Plan are too broad and general to provide specific direction to programming, but strengthened system planning could provide the linkage.

(2) Program Categories

- Maintain Existing A, B, C, H, M, Z, TIB, CRAB.
- Redefine existing categories.
- Add additional categories: e.g., High-Occupancy Vehicles (HOV), Transportation System Management (TSM), etc.
- Reduce/Refocus categories:
 - By type of work – e.g., maintenance, preservation, improvement;
 - By type of facility – e.g., Interstate, non-Interstate, Bridge;
 - By planning objective – e.g., economic development, growth management, personal mobility.

(3) Needs Analysis

- **Current Models.** If program categories remain unchanged, the current technical needs models could continue to be used.
- **Revised Models.** A revised set of technical needs models could be developed consistent with current priority criteria or broader criteria reflecting a range of policy objectives and recognizing that different transportation solutions may be appropriate depending on the policy issues of most concern.
- **Analysis of Alternative Performance or Facility Service Levels.** Could be required to explicitly define different levels of need or the cost of meeting different objectives.

Table 2.1 Range of Alternatives (continued)

(3) Needs Analysis (continued)

- **Planning Documents.** The product of the proposed new system planning process could be used to define some regional needs.
- Identification by districts and local jurisdictions based on specific criteria.

(4) Target Funding to Categories

- **Statute.** Existing statute defines a priority order for funding Categories A, B, H and C. Statutory direction could continue to be used to provide direction on funding priority.
- **Needs.** Establish targets based on relative needs.
- **Budgetary Process.** The appropriate level of funding for each category could be set during the budgetary process once program evaluation and proposed program accomplishments are known and have been reviewed.
- Fixed split by formula.
- Minimum split for each category with a discretionary portion.

(5) Project Identification

- **Needs Process.** A needs analysis process can be used to identify and evaluate candidate projects.
- **Planning Documents and Activities.** The proposed new system planning process may be an effective mechanism to identify potential projects on a regional basis.
- **District and Local Jurisdiction Identification.** Whether as part of the new system planning process or as a supplement, both WDOT district offices and local jurisdictions can identify specific projects consistent with definitions of need and level of improvement guidelines.

(6) Project Evaluation Criteria

- **Needs, Facility Standards.** Needs criteria and facility improvement standards can be used to define severity of problems.
- **Levels of Service.** Level of service to be provided by an improvement.

Table 2.1 Range of Alternatives (continued)

(6) Project Evaluation Criteria (continued)

- **Cost-Benefit, Cost-Effectiveness.** Explicit measurement of project benefit or output (effectiveness) can be compared to cost.
- **Satisfaction of Planning Objectives.** Criteria can be defined to ensure that projects are consistent with regional, growth management, air quality and other plans or general objectives.

(7) Project Ranking

- **Existing Ranking Methods.** Existing ranking methods provide an overall project score and priority listing based on established technical priority criteria.
- **Modify Existing Methods.** Existing methods can be modified to reflect broader policy concerns and benefit and output measures while still providing a consistent and objective basis for developing a ranking.
- **Simplified Ranking.** To make the process as clear and understandable as possible, somewhat simplified versions (fewer criteria) of existing methods could be developed.
- **Quantitative/Qualitative Assessment.** An approach combining a variety of qualitative and quantitative factors somewhat similar to existing Transportation Improvement Board and County Road Administration Board methods could be developed.

(8) Program Evaluation

- **Program Scope.** Evaluate scope of program with respect to identified needs.
- **Program Benefits.** Evaluate likely impact of program with respect to policy objectives, including those related to transportation system performance.

(9) Program and Performance Monitoring

- **Program Delivery.** Monitor program based on projects implemented and total expenditures by category and type of work.
- **Performance Monitoring.** Track system conditions and performance over time and compare to program objectives.

3.0 Recommendations

3.0 Recommendations

The recommended changes to the state's programming process are designed to:

- Reflect the full range of policy issues defined in the State Transportation Policy Plan.
- Highlight the key trade-offs and choices facing the state in terms of resource allocation decisions.
- Improve the accountability of the process by strengthening the measurement of program performance and system condition.

As discussed earlier, the primary motivation for these recommendations is the emerging policy environment that the state is facing today and is likely to face in the future. The existing process has served the state well and provides a strong foundation for improving the programming process to meet the challenges of the future. However, in our opinion the current process is not able to accommodate emerging changes in policies affecting transportation, and needs to be revised or adjusted.

Section 3.1 presents a brief summary of the recommended changes to the process. Section 3.2 describes the proposed changes in more detail and Section 3.3 compares the proposed changes to the existing process. Section 3.4 describes the decision-making roles of various groups involved in programming.

■ 3.1 Summary of Recommended Programming Process

Recommended changes to the programming process were developed for each of the following areas:

- **Policy Direction.** Legislative and administrative guidance on how the programming process is to be carried out, and mechanisms for linking the process with established policy objectives.
- **Program Structure.** Division of the program into categories and sub-categories.
- **Needs Analysis.** The process of identifying problems and deficiencies, evaluating alternative solutions and trade-offs, and estimating the costs of well-defined levels of improvement.
- **Target Funding Levels.** Establishment of initial targets for funding allocation to different program categories. This includes targets for district allocations for some program categories.
- **Project Identification.** Identification of specific candidate projects within each program category. This element of the programming process is proposed to be a direct output of needs analysis.
- **Project Evaluation and Ranking.** Evaluation of individual candidate projects with respect to specified criteria, and prioritization of projects based on the evaluation results.
- **Initial Program Development.** The format of the six-year and biennial programs.
- **Program Evaluation.** The process of evaluating what the proposed program will achieve with respect to policy objectives and the implications of key trade-offs in the use of funds and program category funding levels.
- **Final Allocation.** The actual allocation of funds to program categories.
- **Program and Performance Monitoring.** Monitoring program delivery progress and tracking system conditions and performance over time.
- **Interjurisdictional Issues.** Relationship between state programming decisions and time cycle and local programming.

Figure 3.1 provides a graphic summary of the recommended programming process. Key elements of the proposed process are:

- Broadening of statutory guidance on the programming process to encompass the full range of policy objectives which have emerged in recent years.
- Establishment of stronger nonstatutory policy guidelines to be addressed by the programming process which are revised on a biennial basis.
- Restructuring the program into three categories (Maintenance, Preservation and Improvement), with clear, unambiguous definitions of the types of projects included in each. The state program (Category Z) providing support to local programs and the Transportation Improvement Board and County Road Administration Board Programs would remain as is until changes to the state process and new Federal programs are finalized.
- Strengthening linkages between policy objectives, planning and programming through the use of explicit evaluation criteria and performance measures, and the integration of program needs analysis with the WSDOT system planning process.
- Stronger emphasis on providing an ability to make trade-offs within and across program categories based on explicit analysis of what will be achieved given alternative levels of investment.
- Establishment of explicit program delivery and system condition and performance monitoring processes.
- Improved coordination between state and local programming decisions and processes.

■ 3.2 Description of the Proposed Programming Process

The recommended changes to each element of the programming process are described in this section.

Figure 3.1 Recommended Programming Process

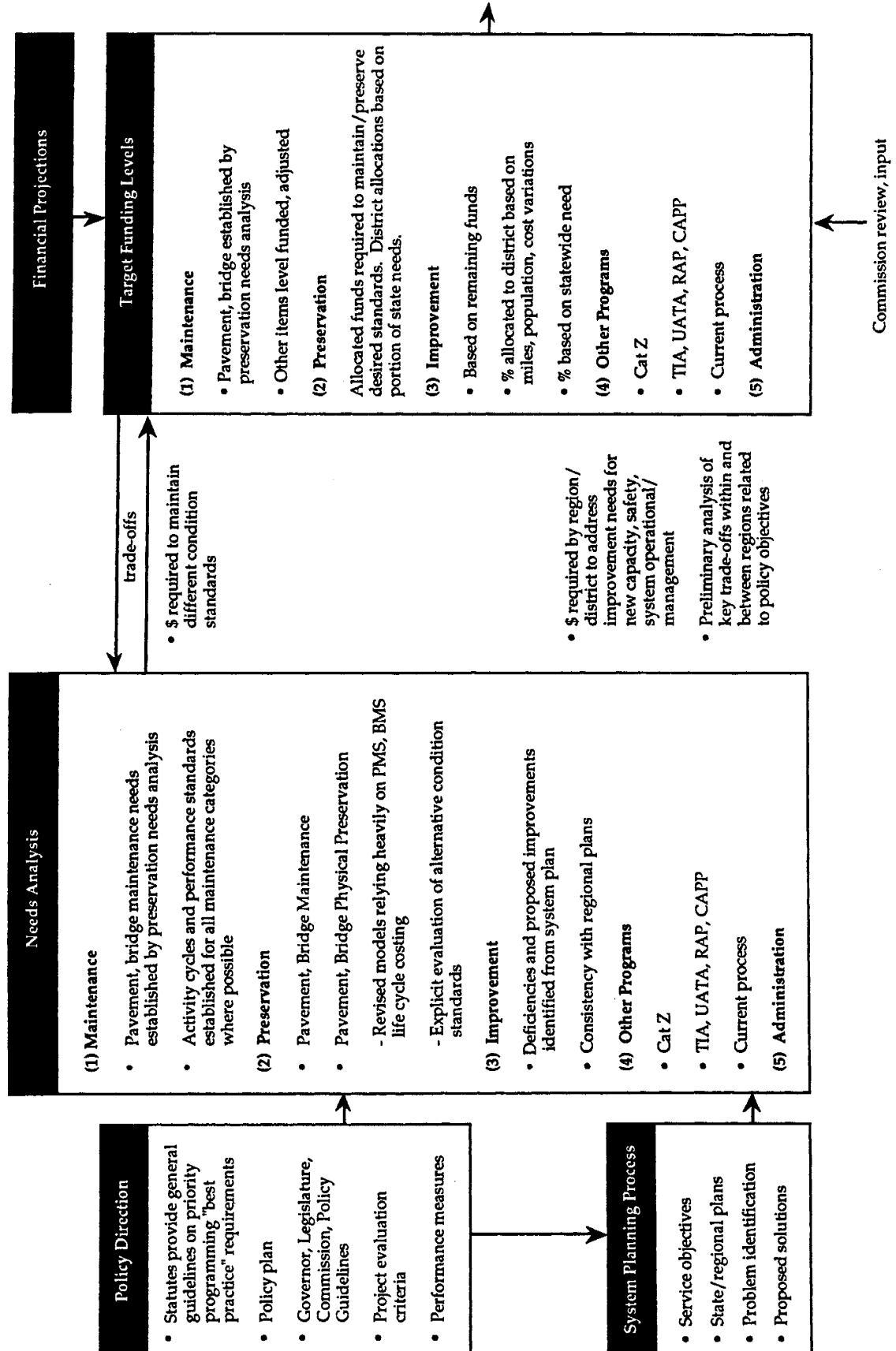
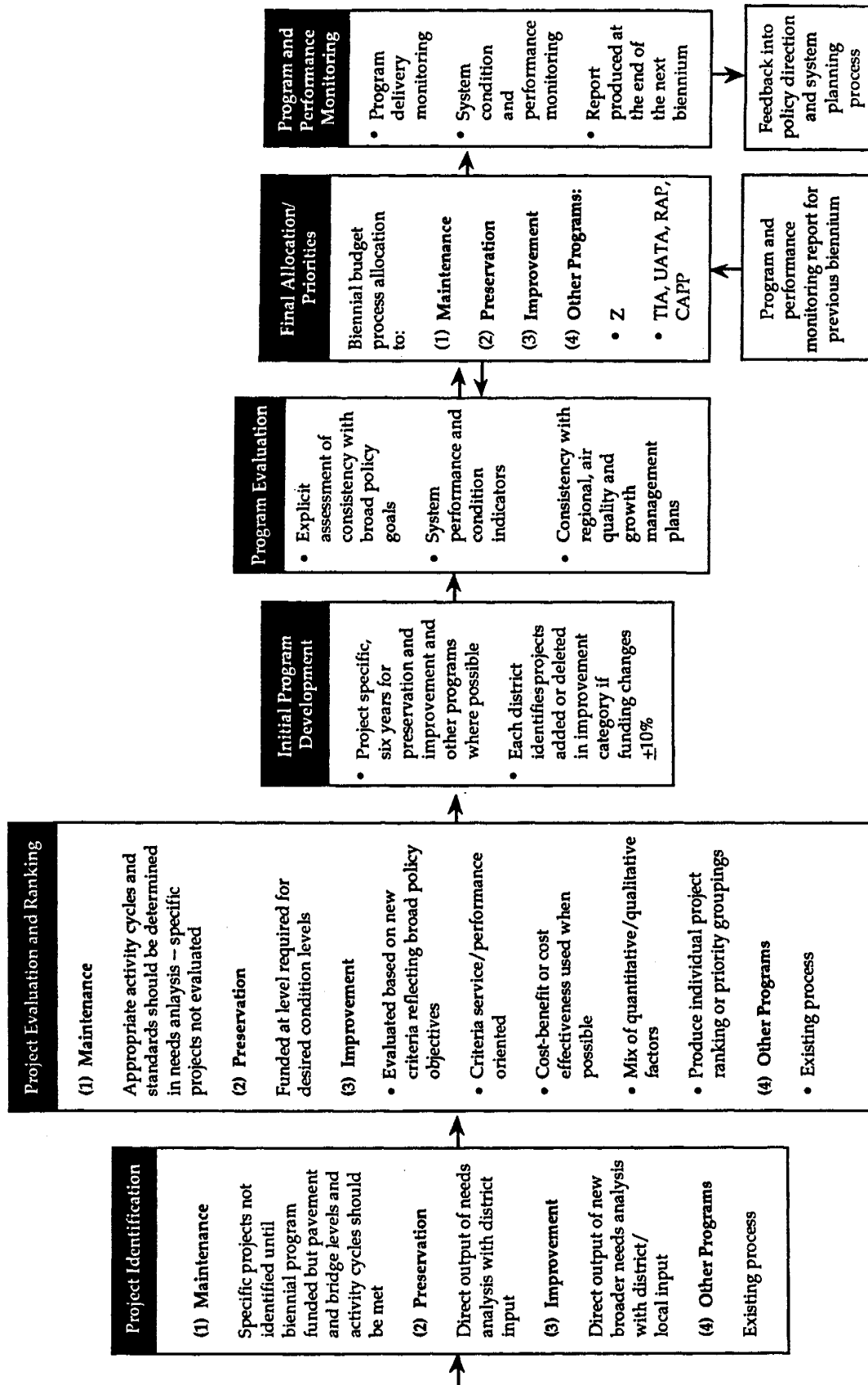


Figure 3.1 Recommended Programming Process (continued)



Policy Direction

Objectives

Key objectives are to broaden policy guidance for programming and to increase the flexibility to respond to new objectives which may emerge. The ability to respond to regional differences in needs and to local government needs is important as well.

Policy direction to the current programming process is provided primarily by statute. Existing statutes place clear emphasis on system preservation and accident reduction and identify a range of other general priority criteria that must be used to evaluate candidate projects. However, there is currently no mechanism that provides guidance to program decisions reflecting the full range of policy concerns identified in the State Transportation Policy Plan or recent state and Federal legislation related to growth management, demand management, and air quality.

There are several reasons why statutory direction alone should not be the only source of explicit policy guidance to programming. These reasons include:

- The nature of the policies identified in the State Transportation Policy Plan, with the exception of system preservation, are very broad in nature and too general to translate directly into guidance for program decisions.
- Some of the policies may conflict (e.g., economic development versus environmental protection) and the key issue is the appropriate balance in addressing all policies. This balance may vary over time and differ from region to region in the state.
- The programming process itself should be structured in a way to help to determine the appropriate policy balance by periodically examining the implications of alternative uses of available funding.

Over the past few years the programming process has reflected a policy framework that has remained relatively constant and defined by statute to emphasize preservation and accident reduction. Placing emphasis on system preservation and accident reduction was, and should continue to be, a priority concern. However, as more resources have been provided to the transportation program and a more complex set of policy issues confronts the state, a relative static policy framework will no longer be an effective way to guide transportation resource allocation decisions. The intent of these recommendations on policy direction is to:

- Provide mechanisms to examine the full range of policy issues each biennium;

- Allow for all the key participants in the decision-making process to participate in formulating the appropriate balance among different policy goals; and
- Provide the flexibility to examine the tradeoffs in alternative uses of always scarce funds.

Recommendations

The recommended changes include:

- Revise the existing statute to encompass all of the policies in the State Transportation Policy Plan and relevant legislation including growth management. This can be done by requiring that the programming process reflects policies in the State Transportation Policy Plan, which is to be revised biennially.
- Add a new section to the programming statute to define requirements for good programming practices (including the preparation by the Commission and WSDOT of a program manual documenting the specific practices and methods to be used) and for the development of program and performance monitoring reporting.
- WSDOT and the Commission should develop specific policy goals and objectives for each biennium. A mechanism should be provided for the Legislature and Governor to review and provide input into the key issues the program will reflect. This mechanism could be a written summary prepared during the legislative session during the first year of the biennium and prior to the preparation of the next biennial program and budget. The summary should review the State Transportation Policy Plan as a whole and then define the specific areas of emphasis or concern for the upcoming biennium.
- Develop a strong connection between WSDOT's proposed new system planning process and the programming process. Development of a new system planning process is underway and was approved by the Commission in mid-1991. The goal of this process is to explicitly develop measurable service objectives related to each of the policies in the State Transportation Policy Plan and evaluate alternative levels of service objectives both in terms of the costs of achieving them and the likely benefits. The establishment of a strong regional planning process in which state and local government identify critical transportation problems and appropriate solutions in each region is also part of the system planning process. Ideally, the service objectives developed in system planning would provide direct guidance to the programming process by defining criteria for measuring needs, identifying candidate projects and evaluating projects and programs at least for some

program categories. Service objectives would then be used to provide consistent and measurable policy guidance through the various steps of the programming process.

For linkages between the system planning and programming processes to be effective, service objectives and need criteria from system planning should be made available in time for the start of the biennial program development cycle (12-18 months in advance of biennial program approval).

- Periodically through the new system planning process, the programming process, or both, the Commission and WSDOT should explicitly evaluate the implications of alternative uses of state transportation funds. Explicitly examining, documenting and reporting these trade-offs can help establish the appropriate balance between different policy goals and illustrate the key choices facing the state. Again, ideally, a consistent set of service objectives would be used to define these trade-offs.
- The biennial budget process should be used by the Commission, Legislature and Governor to set the final allocation of funds to program categories. To make this an effective mechanism, WSDOT must provide specific information on likely program impacts and accomplishments as well as a program and system performance report for the previous biennium.

Program Structure

Objectives

The objectives of the recommendations related to program structure are to:

- Define a clear, simple and consistent set of program categories that can be explicitly related to key policy objectives.
- Establish a program framework that could be used to define consistent program categories across all modes and jurisdictions.
- Allow competition for funds among alternative service and system improvements while ensuring that the appropriate system preservation and accident reduction emphasis is maintained.
- Provide the ability to take full advantage of the likely flexibility in the new Intermodal Surface Transportation Efficiency Act.

- Minimize earmarking of funds for particular systems or types of improvements in order to allow for cost-benefit trade-offs as part of the programming process.

Recommendations

The specific recommendations are to:

- Establish three major program categories for the portion of the state program oriented toward the state system or toward addressing statewide concerns. These categories would be:
 - Maintenance,
 - Preservation, and
 - Improvement.
- Continue the existing state program, Category Z, that provides funding and technical assistance for local programs. However, the existing Category Z program will have to be modified to reflect the new Intermodal Surface Transportation Efficiency Act.
- Maintain the existing Transportation Improvement Board and County Road Administration Board programs for local jurisdictions. These programs are widely supported at the local level and are targeted toward key transportation needs, but may need to be reviewed and adjusted depending on the changes implemented at the state and Federal levels.
- Separately fund, as a program category or line item, those administrative, research or overhead costs that are currently in Category A and other program categories, but which cannot be easily allocated to specific projects. Alternatively, fund such items out of an overhead multiplier on all projects.

A discussion of each of these recommendations occurs below. It is important to emphasize that the definition of the preservation program category as recommended here differs substantially from the current Category A. Also, while project eligibility rules for Federal funding must be identified for each proposed program category, it is not recommended that the state's program structure be dictated by the funding categories contained in the new Intermodal Surface Transportation Efficiency Act.

Maintenance. The proposed maintenance program category would be identical to the existing program Category M. It would include bridge and pavement routine maintenance as well as snow and ice removal, and all

other existing maintenance activities related to roadside facilities and rights-of-way. However, two changes in the current procedures used to develop the maintenance program are recommended. First, the routine bridge and pavement maintenance activities included in Category M should be explicitly defined as a subcategory and the funds allocated to this subcategory should not be used as a contingency for other maintenance activities except in extreme emergencies. Second, service standards or appropriate time cycles (e.g., frequency of mowing, etc.) should be established for as many maintenance activities as possible. The objective of this is to increase the ability to examine alternative uses of funds within and between program categories. However, there are some maintenance activities for which it is not useful to define activity cycles.

Preservation. The proposed preservation category would consistently define preservation as those investments required to maintain existing bridges and pavements at a selected condition level or bring facilities up to this condition level. Together with the bridge and pavement subcategory within the maintenance program it would represent in a clear and consistent fashion all the expenditures devoted to the preservation policy objective. The condition level selected for bridges and pavements is a key policy choice and is discussed further below under Needs Analysis.

The proposed preservation category is not the current Category A and differs from Category A in two important respects. First, the preservation program as recommended here would include only those projects which are maintaining and preserving the physical condition of existing bridges and roadways at whatever condition level has been selected as appropriate for a particular class of facility. Therefore it would not include the Category A improvements that address accident reduction or minor service improvements (lane widening, climbing lanes, intersection improvements, etc.). Second, the preservation program as recommended here would include any Category B and H projects which are preserving the physical condition of bridges and roadways at the desired condition levels. Service improvements now included under Categories B and H would not be included. Removing accident reduction improvements from the proposed preservation program is not intended to imply that less priority (or less funding) be provided for accident reduction. Rather, the intent is to make the objectives of major program categories as clear and distinct as possible to assist in defining key trade-offs and measuring accomplishments.

Finally, it is recommended that those items in Category A and other categories related to administration, research, and other overhead activities would be identified as a separate line item or program category or alternatively, these items could be covered through an overhead multiplier.

Improvement. The improvement program category as recommended here would include all of the projects and expenditures oriented toward improving the service provided by the state's transportation system. This

would encompass service improvement projects currently included in existing Categories A, B, C, and H. It should also explicitly include the full range of transportation solutions which are eligible for state and Federal funding, from low cost transportation systems management programs to major new capacity investments, including highway and transit-related projects.

It is also recommended that four subcategories be established within the improvement program:

- Minor service/operational;
- Accident reduction;
- Efficiency/management; and
- Major capacity.

Table 3.1 illustrates the types of improvements to be included with each subcategory. The first two subcategories are expected to be developed within each WSDOT district subject to statewide guidelines on what constitutes a deficiency, the appropriate levels of improvement for a given deficiency and priority criteria. The districts are the appropriate place to identify and evaluate candidate projects of these types. However, it is **not** the intent that districts have complete discretion on the projects funded in these subcategories. Many of the improvements identified in these two subcategories may be associated with a preservation project. The second two subcategories are expected to be developed on a statewide basis.

While the subcategories will be useful to define different types of improvements and relate policy objectives to improvements, it is explicitly not recommended that any fixed funding guidelines or order of funding priority be established for these subcategories. Rather, competition for funding among these subcategories should be allowed and may in fact result in somewhat different emphases in different bienniums. The recommendations on developing initial target funding levels for these subcategories (as discussed later and reflected in Figure 3.4) provide a mechanism for the development of initial candidate programs, but are not intended to constrain the ability to shift funds between subcategories after the candidate programs have been evaluated. Keeping all subcategories within one overall improvement program category is also intended to emphasize the desirability of examining trade-offs in funding levels among all of these subcategories.

It should also be stressed that some projects in each of these subcategories may have accident reduction benefits. However, projects funded in the

Table 3.1 Improvement Program — Subcategories

Minor Capacity/Service

- Climbing lanes
- Intersection improvements
- Geometrics
- Minor widening
- Roadside features

Accident Reduction

- Projects whose primary benefit is reduction of accidents or accident severity

Efficiency

- Ramp metering
- Demand management
- Transportation System Management (TSM)
- Pricing (tolls)
- Automatic Vehicle Identification (AVI), Intelligent Vehicle Highway Systems (IVHS)
- Freeway Arterial Management Effort (FAME)

Major Capacity

- New highway
 - Expand existing highway
 - High Occupancy Vehicle (HOV) Facilities
 - Transit
 - Bridge
 - New
 - Replacement with service improvement
-

Accident Reduction subcategory are likely to be justified solely or primarily due to accident reduction benefits.

Category Z. The state program which provides funding and technical assistance to local programs is recommended to be continued, though it will need to be revised due to the new Intermodal Surface Transportation Efficiency Act.

Local Programs. As discussed earlier, the state provides strong support to local jurisdictions for investments in streets and roads through the Transportation Improvement Board and County Road Administration Board programs. It is recommended that these programs be continued as is. An overall assessment of local programs was not a focus of this effort, but it is clear that the state programs oriented toward local jurisdictions enjoy widespread support. However, given the new Intermodal Surface Transportation Efficiency Act and depending on the changes implemented in the state's programming process, these programs may need to be adjusted.

Administration, Research, Other Overhead. Any of these expenditures currently in Category A and other categories which cannot be allocated directly to projects should be funded either as a separate line item or program category, or be covered with an overhead multiplier on all projects. The purpose for this change is to develop as clear and simple a program structure as possible while recognizing that these activities are critical to support the state's overall transportation program. Maintaining the eligibility of these activities for Federal reimbursement is a factor that must be considered in defining this category.

Needs Analysis

Objectives

The objectives of the recommendations related to needs analysis are to:

- Redefine needs categories and methods to reflect the proposed new program structure.
- Make criteria for defining needs consistent with the criteria for defining candidate projects.
- Encourage as broad a range of transportation solutions as possible to be considered to address identified deficiencies or problems.
- Provide a sound technical basis for identifying investment opportunities and choices.

- Develop an explicit connection to the proposed new system planning process being developed by the Commission and WSDOT.

Recommendations

The needs analysis recommendations are discussed below for each of proposed new program categories as defined in the previous section.

Maintenance. Currently maintenance needs are established by assuming the current program will be level funded after adjusting for inflation. For most maintenance items there is no recommendation for changing this process except that, whenever possible, performance standards or activity cycles (i.e., appropriate time intervals between maintenance activities) should be defined as a means of measuring and communicating what is accomplished through the maintenance budget. It is recognized that WSDOT has attempted to define and use such standards in the past and that it is often the staff level required to meet critical activity needs (i.e., snow and ice removal) that may dictate the standards and activity cycles for other maintenance activities. However, developing some criteria to communicate what is the intended level of maintenance activities and what is actually accomplished through the maintenance budget is desirable.

For pavement and bridge maintenance it is recommended that the appropriate level of effort for these activities be determined in conjunction with the analysis of pavement and bridge preservation needs as described below. Either existing WSDOT pavement and bridge management systems or modified systems developed in response to the new Intermodal Surface Transportation Efficiency Act should provide technical tools to support this analysis.

Preservation. It is recommended that a strong technical needs model approach be maintained for establishing needs for the preservation program. However, the recommended needs analysis approach differs from the current Category A and H models in a number of ways:

- The recommended definition of the preservation program includes only investments which are necessary to maintain facilities at, or bring them up to, a specified condition. The existing Category A and H models also reflect various service improvement needs that would now be part of the improvement program.
- It is recommended that pavement and bridge maintenance needs be estimated in conjunction with preservation needs for these facilities.
- Criteria used to define preservation needs should be consistent with the criteria used to identify and select preservation projects.

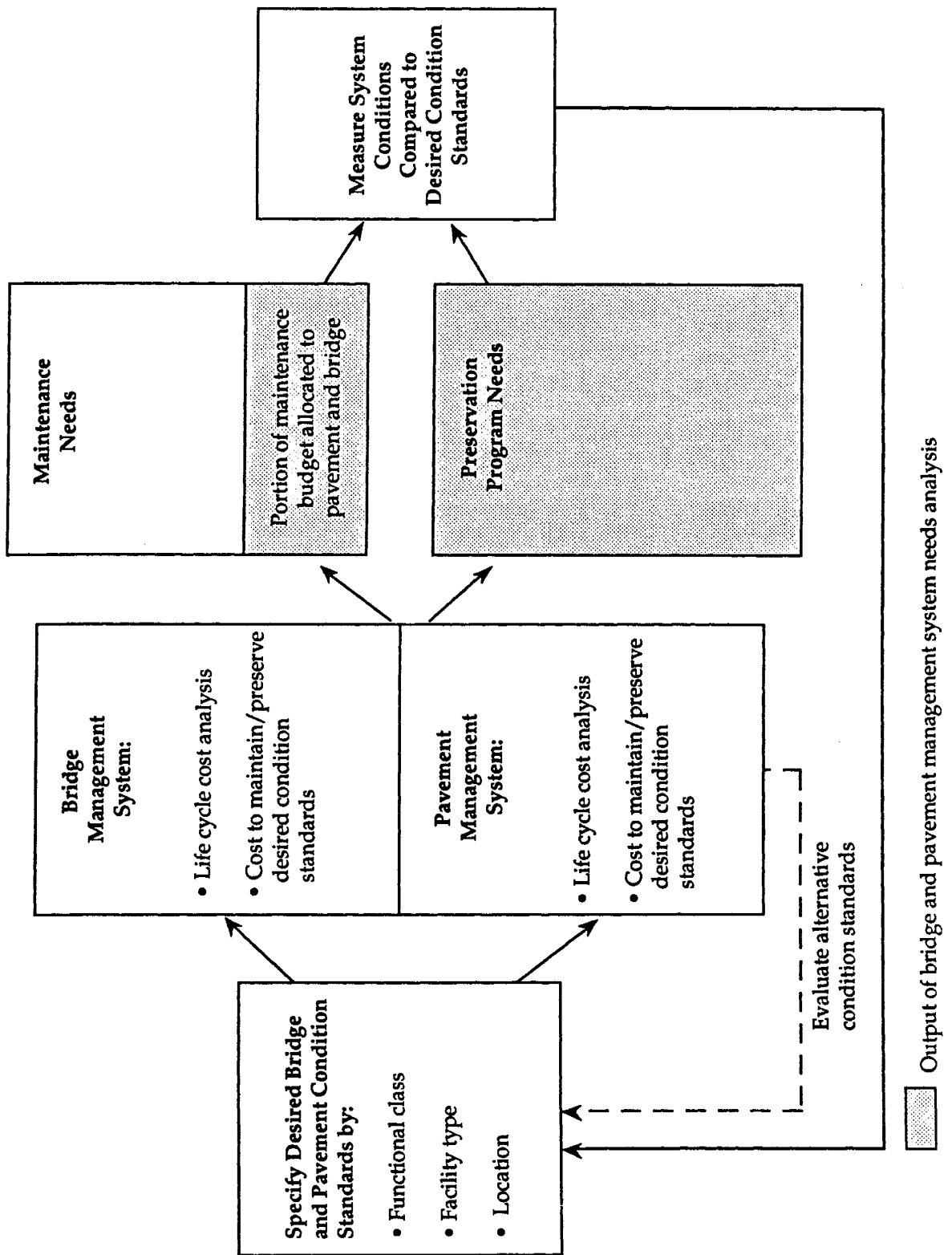
The recommended approach for estimating preservation needs will provide a consistent and sound technical method for estimating preservation needs for all existing bridges and pavements on the state highway system. Figure 3.2 illustrates the proposed needs analysis process for bridge and pavement maintenance and preservation needs. The steps in this process are:

- Specify desired bridge and pavement condition levels. These standards may vary by functional class, facility type and location. Current standards reflected in the Category A and H models and WSDOT's pavement and bridge management systems are a reasonable starting point for selecting appropriate condition levels, but the **needs analysis process should explicitly evaluate the implications of alternative condition levels**. Selection of appropriate condition levels is the key policy choice in the preservation program (and the bridge and pavement elements of the maintenance program). Given a particular condition level, the pavement and bridge needs analysis methods recommended here can identify the least cost set of improvements to achieve that condition level. Thus, changing the desired condition level will increase or decrease the funding level required to meet the preservation policy objective.

The Commission's and WSDOT's new system planning process is oriented toward explicitly evaluating alternative "service objectives" and, once implemented, should provide the mechanism to examine different condition levels as part of a preservation needs analysis. While WSDOT has analyzed alternative preservation scenarios in the past, the recommendation is to perform these analyses on a more regular basis and communicate the results.

- For any set of condition levels, WSDOT's pavement management system (PMS) can be used to analyze the life cycle costs of maintaining these standards over time. The PMS is an analytical tool which identifies the lowest cost mix of maintenance and capital (preservation program) expenditures required to maintain a given pavement condition level. It can be used to evaluate the cost implications of alternative condition levels. WSDOT's bridge management system may be able to perform a similar type of analysis for bridges. An acceptable alternative for the bridge analysis would be to use those portions of the existing Category H needs model oriented toward preservation needs (versus service improvement) until a fully functional BMS is available. The new Intermodal Surface Transportation Efficiency Act requires that all states develop and use pavement and bridge management systems with the capabilities described above.
- Once a set of acceptable condition levels has been selected, the bridge and pavement portion of maintenance program needs and preservation program needs can be established.

Figure 3.2 Maintenance and Preservation Needs



- As shown in Figure 3.2 and discussed later in this section, it is anticipated that actual bridge and pavement conditions will be monitored each biennium and compared to the selected condition levels.

While it is neither anticipated nor recommended that the desired condition levels for defining pavement and bridge preservation needs change each biennium, it is highly desirable to periodically evaluate alternative condition levels and change them depending on the availability of funding or shifts in priorities. Also, the type of needs analysis recommended here is not likely to result in the same number of miles of resurfacing or bridge preservation projects in each biennium even if the selected condition levels do not change.

Improvement. While the needs process for the preservation program can rely on technical models, the improvement program needs analysis should combine the results of technical analysis methods and inputs from a broader planning process as envisioned by the Commission and WSDOT in developing a new system planning approach. The reasons a broader needs analysis process is required are:

- Unlike the preservation program which is focused on accomplishing a single clear policy objective, the improvement program must respond to an array of sometimes conflicting policy objectives.
- The nature of transportation service deficiencies and the appropriate transportation solutions may vary from region to region within the state, making needs estimates based on standard solutions less useful for some types of deficiencies.

The recommendations for the improvement needs analysis process are:

- For the minor service improvement and accident reduction subcategories, a series of deficiency indicators should be developed to identify candidate improvements. These criteria should be applied consistently across the state and can build upon the current criteria in the Category A model oriented toward accident reduction and minor service improvements.
- For the capacity and efficiency subcategories the needs analysis should reflect the results of three activities:
 - Initial screening of problems and deficiencies based on a defined set of deficiency and eligibility criteria for different types of improvements. Criteria should focus on future conditions and potential problems as well as current deficiencies.
 - Output of a strengthened system planning process as proposed by the Commission and WSDOT which would provide:

- A systemwide perspective on needs in each region;
- Interjurisdictional coordination in identifying problems and appropriate solutions in a particular region;
- Consideration of the full range of transportation solutions;
- Responsiveness to the broad range of policy objectives contained in the State Transportation Policy Plan, recognizing that the appropriate balance among policy objective may vary from region to region; and
- Consistency with regional plans and objectives;
- Direct input from local jurisdictions, regional planning organizations, and WSDOT district offices.

The intent of WSDOT's proposed new system planning process is to define and test alternative service objectives reflecting all of the policies in the State Transportation Policy Plan. This effort may yield directly the type of initial screening criteria and need estimates reflecting regional differences envisioned here. Table 3.2 illustrates the type of screening criteria that could be used to define potential deficiencies. Such criteria coupled with direct input from districts, local jurisdictions and regional planning organizations could provide the basis for establishing improvement needs until the new system planning process is established. Ultimately, however, a strengthened planning process is likely to be the only effective mechanism to define improvement needs that are responsive to the range of policy issues of concern.

Category Z. No change is recommended for this category.

Local Programs. No change is recommended to the current process of identifying potential projects to be funded by Transportation Improvement Board and County Road Administration Board programs providing direct support to local jurisdictions.

Administration. Needs should be defined based on historical funding levels as a fixed percent of the total capital program or from an analysis of the specific activities to be funded each biennium.

Target Funding Levels

Objectives

In order for a candidate program to be developed by WSDOT, target funding levels should be established for each program category. Currently

Table 3.2 Example Needs/Deficiency Criteria – Improvement Program

-
- Volume to capacity ratio (existing and forecast)
 - Duration of specified level of service
 - Cost-effectiveness index: project cost/change in vehicles or person-trips per hr
 - Consistency with level of service standards in Growth Management Plan or Highway System Plan
 - Accident index (considering rate and severity)
 - Load carrying capacity
 - Width (bridges, lanes, shoulders)
 - Sight distance
 - Safety features
 - Access, conflict points
 - Needs identified in adopted plans addressing:
 - Economic development objectives
 - Growth management
 - Air Quality
 - Freight movement need
 - Multimodal connection need (airport/seaport/rail)
 - Water quality and other environmental issues
-

these levels are established by the Category A and H needs models, funding of Category B required to use all Federal Interstate funds, and level funding (adjusted for inflation) of Category M. While the Category C needs model establishes a target level of funding for that program, the actual Category C target depends on the funds remaining after targets are established for the other programs.

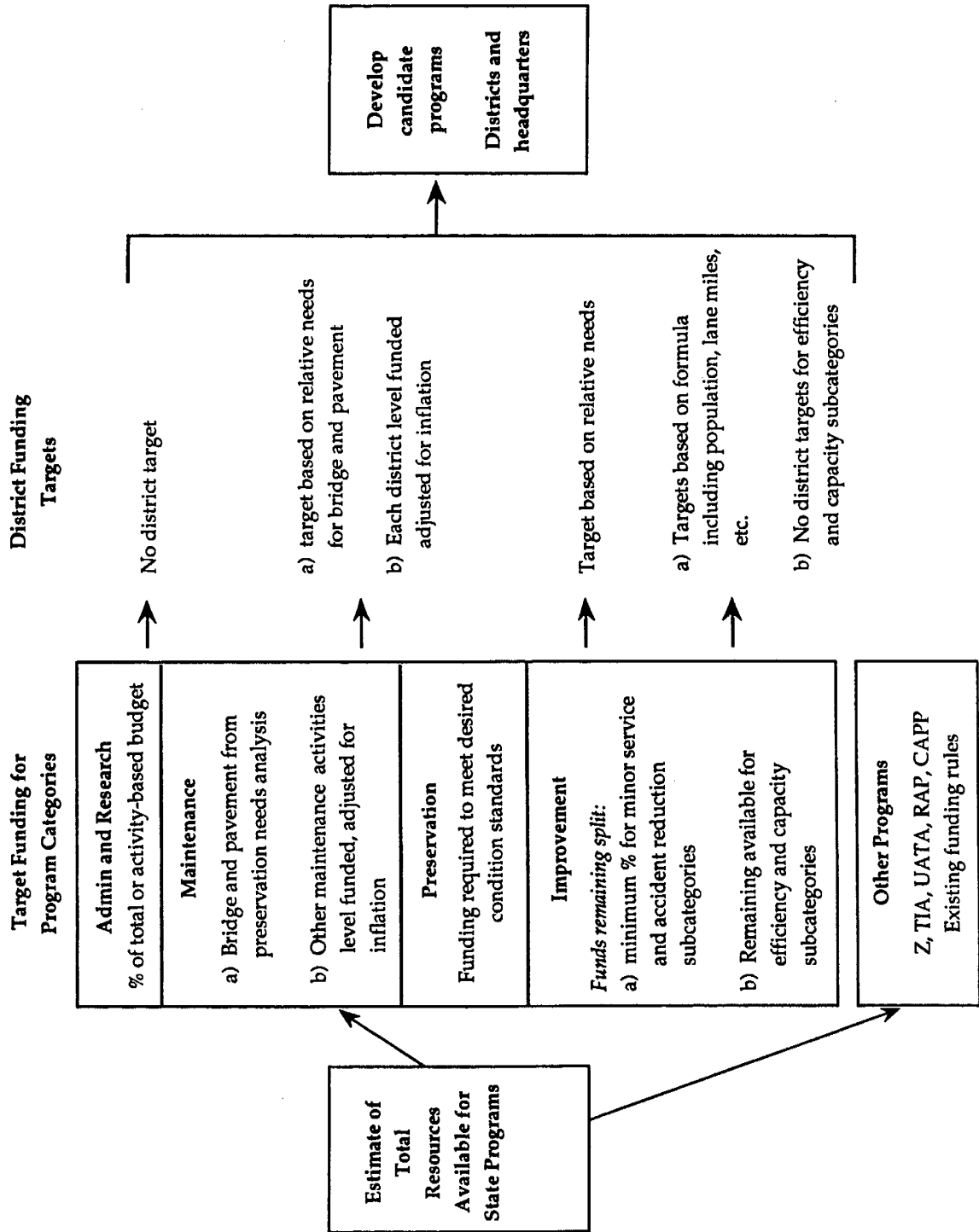
The objective of the proposed recommendations is to provide a basis for establishing initial funding targets to categories recognizing that adjustments and trade-offs may occur once candidate programs are developed and evaluated. Thus, the final allocation to program categories may be different from the initial targets developed in this step of the process.

Recommendations

The recommendations for establishing target funding levels for the proposed new program structure are illustrated in Figure 3.3. Targets would be established as follows:

- The **maintenance** program target would be established by combining the level of bridge and pavement maintenance required as estimated in the preservation needs analysis, with an assumption that other maintenance activities would be level funded (adjusted for inflation).
- The **preservation** program target funding would be a direct result of the preservation needs analysis and would be funded at the level required to meet the desired pavement and bridge condition levels. The desired condition level would be selected based on a periodic analysis of alternative standards or scenarios and funds could be shifted from the preservation category to other categories if a lower level is acceptable.
- The **improvement** program target funding would be the funds remaining after the other program targets are set. This funding level would serve as only an initial target – the process would allow for increases in expenditures on improvements to be traded-off against lower facility condition levels under the preservation category. There would be no fixed allocation to the different subcategories of the improvement program.
- **Category Z.** This state program supporting local programs would continue to be funded as now. However, the new Intermodal Surface Transportation Efficiency Act may require changes to the method for establishing the funding target for Category Z.
- **Local Programs.** Funding levels for the Transportation Improvement Board and County Road Administration Board programs would continue to be established by current statute.

Figure 3.3 Program and District Target Funding Levels



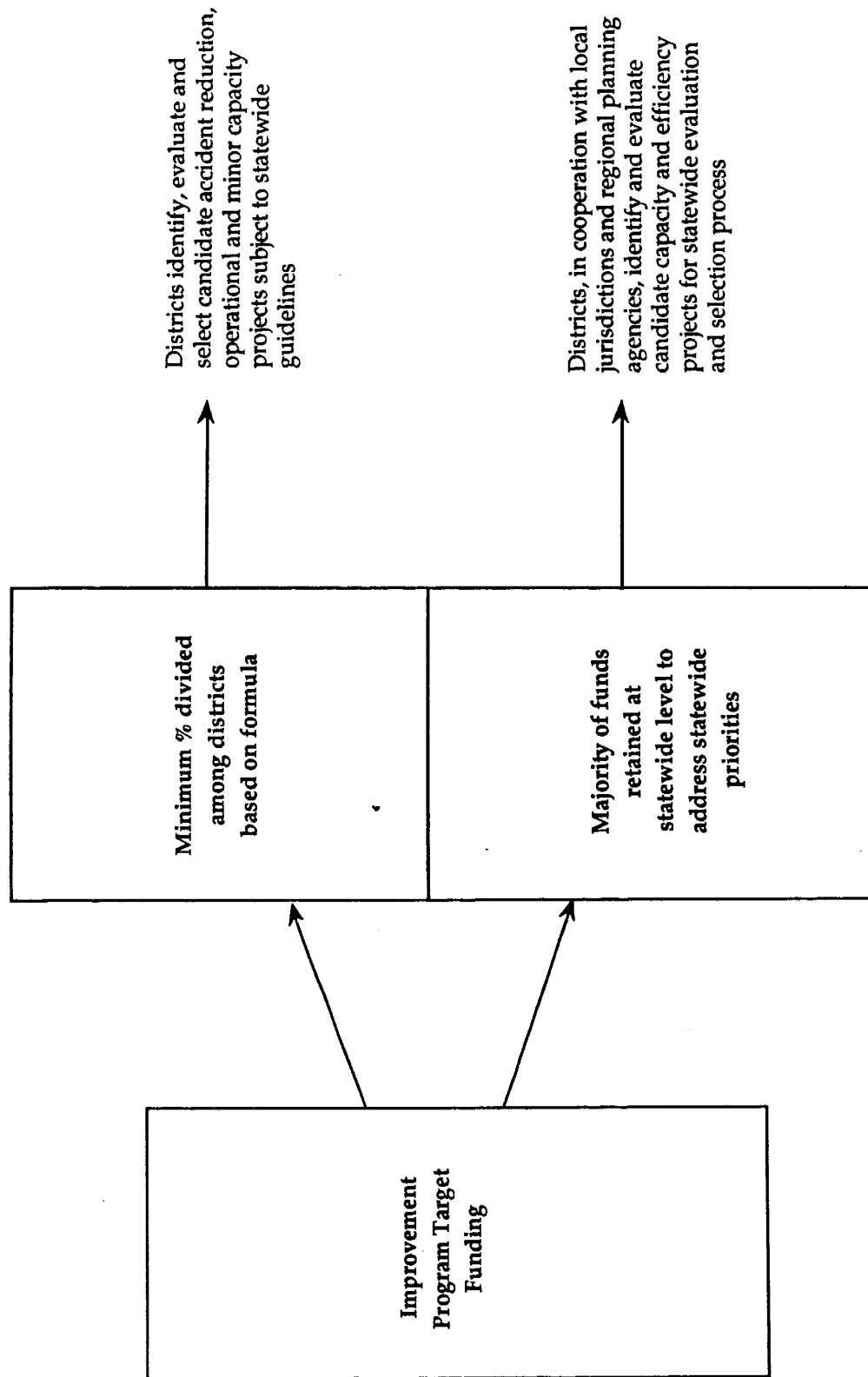
- **Administration**, research and overhead items (currently within Category A and other program categories) would be allocated a percentage of total program funds based on historical funding or a specific analysis of activities to be funded.

Once target funding levels have been established by program category, district targets should be developed for some programs. As shown in Figure 3.3, the recommendations are:

- District targets for **maintenance** would be based on the relative percentage of pavement and bridge maintenance needs as established in the preservation needs analysis. For other maintenance activities each district would be level funded adjusted for inflation and for approved changes (decision packages) submitted by the districts.
- District targets for **preservation** would be based on relative needs as a direct result of the preservation needs analysis.
- As illustrated in Figure 3.4, a minimum percentage of the **improvement** program target funding level would be allocated to districts based on a formula including selected geographic or demographic factors such as population, lane-miles and highway improvements cost index (reflecting variations in costs for performing different types of work in different areas of the state). For the portion of the improvement program funding target allocated to districts, the districts would have some discretion in recommending the mix of improvement projects funded subject to statewide deficiency and level of improvement criteria. Any projects in the accident reduction and minor service/capacity subcategories would be funded from these district targets though districts could also apply these funds to projects in the efficiency and capacity improvement subcategories. The district allocation reflects the fact that smaller accident reduction and minor service improvements are best identified and evaluated at the district level. Also, by giving each district a target geographic equity is served. Candidate programs developed by the districts for the accident reduction and minor service subcategories would be reviewed at the state level. Most of the improvement program target would be retained at the statewide level to address statewide needs. The percentage of the improvement program funding target that is allocated to districts is a policy choice and may vary from biennium to biennium. However, it is anticipated that the major portion of the improvement program target funding would be retained at the state level.

It should be emphasized that the recommendations concerning the development of target funding levels are intended only to provide a starting point for the development of candidate programs. It is not recommended that those targets be viewed as final allocations. Rather, depending on the results of the evaluation of candidate programs, funds

Figure 3.4 Improvement Program Target Funding Levels



may be shifted between program categories, districts or subcategories within the improvement program.

As part of the program development process it may be desirable to explicitly identify how any program category, district program, or improvement subcategory would change with ten percent more or less funding. This would provide an indication of the trade-offs in shifting funds among categories.

- No district targets would be established for **administration and research**.

Project Identification

Objectives

The recommendations related to identifying candidate projects are aimed at:

- Using consistent criteria for defining needs and identifying projects, and
- Encouraging fair and consistent consideration of the full range of transportation solutions.

If the criteria used to define needs are not consistent with the criteria used to identify candidate projects then the needs estimates do not provide a guide to how funds will actually be spent. While the range of transportation solutions that can be funded is constrained by funding eligibility rules (Federal or state), the new Intermodal Surface Transportation Efficiency Act provides significant new funding flexibility. However, to take full advantage of that flexibility, and the flexibility already available under state statutes, criteria for needs and candidate projects should not focus too narrowly on one type of solution. The appropriate solution to a given deficiency may vary from region to region or even within a region depending on many local factors.

Recommendations

The specific recommendations on project identification are:

Preservation. For the preservation program, as defined earlier in the discussion of program structure, **candidate projects should be identified directly from the needs analysis** and these projects, in most cases, should be included in the preservation program. Depending on the structure of WSDOT's pavement and bridge management systems (recommended for performing the needs analysis), individual segments of highway and bridges requiring specific types of treatment should be identified in the

needs analysis consistent with the condition levels that have been selected as a policy choice. Districts would be expected to meet the established pavement condition targets. To ensure consistency across districts, clear guidance should be developed as to the specific types of treatments to be applied to different types of pavement.

However, district offices should have some discretion to adjust the results of the needs analysis in developing a candidate program as long as all projects are consistent with the criteria used to define needs and the clear objective of the program is to maintain all pavements and bridges at the desired condition levels established in the needs analysis. Any district adjustments to the needs analysis results should be justified on an exception basis. If the field judgement of the districts differ widely from the results of the statewide needs analysis, the criteria and assumptions used to perform that needs analysis should be reviewed.

Improvement. For the improvement program subcategories focusing on accident reduction and minor service/capacity improvements, candidate projects can be identified directly from the results of the needs analysis described earlier. In both cases, specific deficiency indicators and level of improvement guidelines (i.e., appropriate response to a particular type and severity of problem) can be used both to estimate needs and to identify candidate projects. However, even for accident reduction and minor service problems, districts should be encouraged to examine different types of solutions and the trade-offs between spreading funds widely over a range of minor problems versus focusing resources on fewer, but more significant improvements. Some types of minor service improvements would only be done if a preservation project was also proposed for that particular road segment or bridge and guidelines could be developed to reflect this requirement.

For the subcategories dealing with efficiency and capacity improvements, a consistent set of technical needs and project identification criteria should be defined. However, given the range of policy issues that these projects must address and the wide variation in the mix of policy concerns and problems confronting different regions in the state, a largely technical and mechanical needs and project identification process alone will have serious limitations. Thus, consistent with the needs analysis recommendations discussed earlier, the recommendation on project identification is that the proposed system planning process being implemented by the Commission and WSDOT be used as a focal point both for defining improvement needs and for identifying candidate projects in each region. To provide a useful guide to program decisions, that planning process must:

- Define appropriate deficiency criteria and level of improvement guidelines which reflect the policy direction provided in the State Transportation Policy Plan.

- For identified deficiencies, ensure that the full range of potential solutions is evaluated, including solutions that require joint state-local action, systemwide management measures, and different modal mixes.
- In regions where growth management, demand management and air quality plans must be developed, clearly define the state's role in either directly implementing portions of those plans or ensuring consistency of the state program with those plans.
- Focus on emerging and future problems and needs as well as existing deficiencies.

As past experience in many states has demonstrated, the type of regional system planning process envisioned can simply become a forum for compiling the plans and wish lists of different local jurisdictions and the state. The effectiveness of such efforts, to some extent, will depend on the flexibility available at all levels of government to apply funds to the transportation solutions that are most effective. The proposed system planning process must extend the positive partnership created through Category Z and the TIB and CRAB processes to address a broad range of complex policy issues. While the results of that joint planning effort may be far from perfect, there is no effective alternative for finding the appropriate balance among the varied policy objectives outlined in the State Transportation Policy Plan.

Category Z and Local Programs. No changes are recommended to the current process of identifying projects for Category Z or the local programs of the Transportation Improvement Board and County Road Arterial Board. However, it is recommended that local input be provided for those projects which are conditional on local or external funding, and that adjustments be allowed due to changes or approvals of local matching, TIB or CRAB funding.

Maintenance. In the case of maintenance, specific projects need not be identified in the program since it is difficult to identify specific projects very far in advance. Rather, various maintenance activities would be identified and funded on a level of effort basis.

Administration. The administration program would be funding various administrative, research and overhead activities as opposed to specific projects. Thus, no specific project identification recommendations are being made for this area.

Project Evaluation and Ranking

Objectives

The recommendations related to the criteria and methods for evaluating and ranking projects are aimed at:

- Making priority criteria consistent with the criteria used to define needs and identify projects;
- Reflecting the full range of policy issues included in the State Transportation Policy Plan; and
- Emphasizing the expected benefits of projects on transportation service or system conditions.

Recommendations

Specific recommendations on priority criteria and ranking:

Maintenance. This category is not expected to have an explicit project evaluation and ranking process, as activities are funded on a level-of-effort basis. While it is recommended that the level of various activities funded be identified and communicated wherever possible, this program will not generally contain specific projects.

Preservation. Project evaluation and ranking for the preservation program should be a direct output of the recommended needs analysis for this program category. The key criteria will be the impact of a project on maintaining or preserving the physical condition of a specific roadway or bridge and the contribution of each project to maintaining overall system conditions at the desired level. Depending on the WSDOT's pavement and bridge management systems the road user benefits associated with preservation projects could also be estimated.

It should be emphasized that while accident reduction projects are not included in the proposed preservation category it is not intended that accident reduction efforts necessarily receive lower priority or funding than currently exists.

Improvement. Recommendations for the improvement program are:

- An objective and explicit project ranking process should continue to be used for each subcategory in the improvement program, but the factors used should be changed to reflect a broader set of policy issues and to emphasize project results or impacts.
- The criteria should include a mix of quantitative and qualitative factors.

- Cost-benefit or cost-effectiveness measures should be used where possible as one of the priority criteria.
- Measures of project impact or results should replace criteria oriented toward the "severity of the problem addressed" wherever possible.
- Criteria should focus on the movement of "people and goods," not vehicles. (WSDOT currently has a project with the University of Washington to develop factors related to personal mobility.)
- Accident reduction benefits may be a key objective and priority criterion, for projects in any of the proposed subcategories.

While development of specific new priority criteria and ranking methods was not within the scope of this project, Table 3.3 illustrates the type of criteria that should be considered in a revised project ranking scheme. It should also be stressed that a number of the factors included in the current priority array should continue to be used as part of a broader evaluation process.

For the accident reduction and minor service improvement subcategories, it is anticipated that the initial project evaluation and ranking will be done by each district office using a **consistent** set of evaluation criteria established statewide. However, the emphasis given to particular types of improvements should be allowed to reflect the specific conditions in each district subject to statewide review.

Category Z. No change is recommended to the current procedures used though again adjustments may be required due to the new Intermodal Surface Transportation Efficiency Act.

Local Programs. No change is recommended at this time to the Transportation Improvement Board and County Road Administration Board project evaluation criteria or ranking methods. However, depending on the changes adopted at the state level and the new Intermodal Surface Transportation Efficiency Act, these procedures should be reviewed in the future.

Administration. No explicit project evaluation and ranking process is recommended for administrative activities.

Initial Program Development

Objectives

The program document should provide a clear understanding of the specific projects to be carried out, their costs, and benefits. It should also provide a basis for making adjustments in the program.

Table 3.3 Example Project Evaluation Criteria

Quantitative Criteria

- Delay index (annual value of time saved per dollar expended)
- Safety index (change in accident costs per dollar expended)
- Change in volume to capacity ratio or level of service (short and long-term)
- Marginal cost per additional peak person trip
- VMT reduction per dollar
- Reduction in vehicular emissions per dollar
- Energy savings per dollar
- Economic benefit per dollar
- Economic development potential index
- Maintenance cost savings
- Local financial participation (ratio of local+private contribution to total project costs)

Qualitative Criteria

- Consistency with regional development objectives
 - Consistency with HOV Systems Plan
 - Consistency with Demand Management Plans
 - Consistency with Air Quality Plans
 - Support for modal integration (Rail, HOV, bicycle, pedestrian)
 - Public support/acceptance
 - Demonstration of new technology or management methods
-

Recommendations

Once the candidate projects are identified, evaluated and ranked, an initial program can be assembled. It is recommended that the program include specific projects for all six years. In addition, to assist in development of a final biennium budget, it would be useful for this initial program document to identify projects which would be added or deleted from each program category if the funding target were to be increased or decreased by ten percent.

Maintenance. The initial program will reflect a proposed level-of-effort for various maintenance activities. Whenever possible, the level of activity or time cycle of various maintenance actions implied by the program should be identified.

Preservation. The initial program should be a direct output of the proposed needs analysis, which reflects the explicit selection of a recommended set of condition standards. The needs analysis should also provide specific guidance on the implications of raising or lowering the recommended condition standards.

Improvement. The initial program will be prepared at the district level for the accident reduction and minor service subcategories and at the state-wide level for the efficiency and capacity subcategories. In each case, the projects which would be added or deleted with a ten percent increase or decrease in funding should be identified.

Category Z. No changes are recommended for this category.

Local Programs. No changes are recommended to Transportation Improvement Board and County Road Administration Board programs.

Administration. The initial program will reflect a proposed level-of-effort for various administration, research, and overhead activities now included in Category A and other categories which can not be easily allocated to specific projects.

Program Evaluation

Objectives

An important objective of all the recommendations concerning the state's programming process is to improve the ability of all groups involved in that process to understand the trade-offs involved in shifting funds among various program categories or subcategories.

Recommendations

Recommendations described earlier were directed at simplifying and clarifying the program structure, making needs analysis criteria consistent with project identification criteria, strengthening the connection between programming and planning, and broadening the set of project evaluation criteria. These were all designed to provide a clearer connection between policy goals and program decisions. However, for those recommendations ultimately to be effective, it is critical that an explicit and documented program evaluation function be established.

The program evaluation should:

- Document the benefits and impacts of the proposed biennial and six-year programs on achieving the stated policy goals and objectives.
- Document the impacts of shifting funds between program categories or subcategories where specific alternatives have been considered as a way of illustrating key trade-offs and choices.
- Use criteria that are consistent with the criteria used to evaluate and rank projects.

In short, the program evaluation is intended to define "what is being bought" in terms of policy objectives with the current proposed biennial program.

Maintenance. The level of funding for various maintenance activities should be identified, and wherever possible, the activity levels or time cycle of maintenance work supported by the proposed funding level should be defined. Bridge and pavement-related maintenance should be specifically identified and appropriate variations in bridge and pavement maintenance funding levels due to shifts in the preservation program level should be identified.

Preservation. The pavement and bridge condition standards that will be maintained by the proposed preservation program funding should be explicitly identified. The condition standards that can be supported by a ten percent increase or decrease in the proposed funding level should also be identified. Table 3.4 provides examples of some potential preservation program evaluation measures.

Improvement. The benefits or impacts of each proposed subprogram within the improvement program category should be estimated for both the recommended level of funding and for funding levels ten percent higher and lower. Table 3.4 provides examples of evaluation measures which could be used though some qualitative measures may also be

Table 3.4 Example Program Performance Measures

Maintenance and Preservation

- Average pavement condition rating
 - Functional class
 - District
 - Volume class
 - Freight network
- Bridge conditions
 - Structural condition
 - Deck condition
 - Number of posted bridges
- Condition over time
- Condition versus target standards

Improvement

- Congestion levels or level of service
 - Average vehicle occupancy
 - Travel time contours
 - Energy consumption levels
 - Air quality levels
 - CO hotspots
 - Ozone levels
 - Impact on development patterns
 - VMT reductions
-

necessary. It must be recognized that many projects within the improvement program will meet multiple objectives and the program evaluation must recognize all of the significant benefits of each project or subcategory.

It should be noted that the program evaluation measures selected should be consistent with the policy objectives (or system planning service objectives) used to translate broad policy guidelines into program directions and with the criteria used to define needs and identify and evaluate projects.

Category Z. No changes are recommended, but the benefits and impacts of this program category should also be characterized wherever possible.

Local Programs. No changes recommended at this time with respect to program evaluation for the Transportation Improvement Board and County Road Administration Board programs.

Administration. The level and type of administration, research and overhead activities funded should be characterized and the implication of shifting funds by ten percent identified.

Final Allocation

Objectives

The final program allocation should be made with a clear understanding of what will be achieved under each category at the given levels of funding.

Recommendations

The final biennium budget allocation to the different program categories would be based on the initial program document and the evaluation of what will be achieved by the program. This allocation may be different from the initial target funding levels, reflecting a more solid understanding of the projects which would be delivered at given funding levels and their associated benefits. The key objective of the program evaluation step is to guide the final budget allocation decisions.

Program and Performance Monitoring

Objective

The objective of the program and performance monitoring function is to document over time actual program accomplishments and system performance to provide a basis to determine:

- If what was proposed in a particular biennial program was actually accomplished and to explain and justify any variations.
- If the expected impacts and policy objectives were actually achieved, by monitoring transportation system performance characteristics and relating them to policy goals and program objectives.

The development of specific program and performance monitoring criteria and reports is critical to establishing accountability for program decisions.

Recommendations

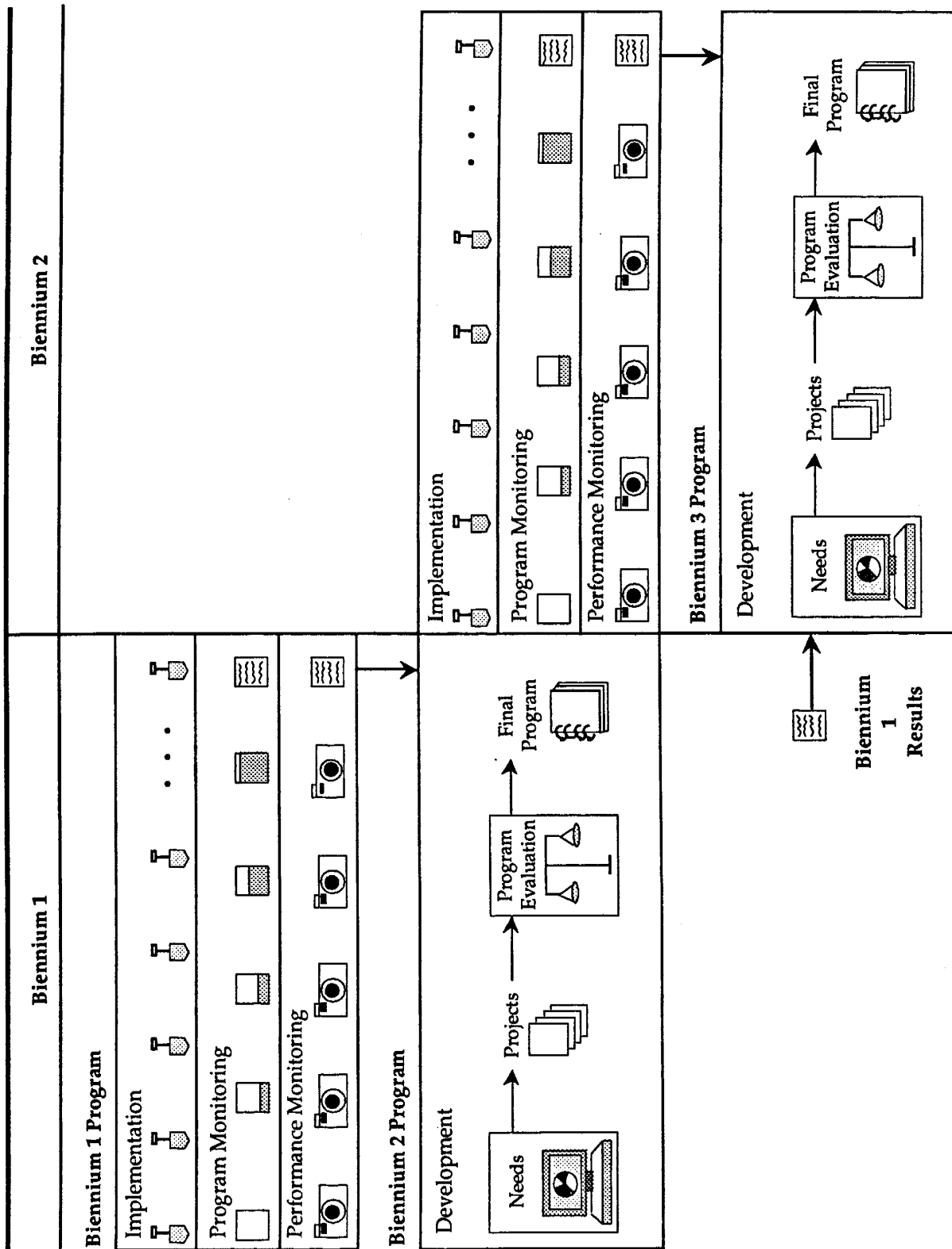
The recommendations are:

- Establish a program monitoring function and produce a program monitoring report at the end of each biennium which documents program accomplishments. The level and mix of work and the specific projects implemented should be compared to the original proposed biennial program (as amended) and deviations and exceptions should be discussed.
- Develop a system performance monitoring function that will track system conditions and performance over time and provide a guide to how well policy goals and program objectives are being met. These system condition and performance measures should be explicitly related to specific program categories and subcategories wherever possible, but it is recognized that some objectives (e.g., accident reduction) will be supported by projects in several program subcategories. Table 3.4 illustrates examples of system performance measures. As discussed earlier, these measures should be consistent with the program evaluation measures used to characterize trade-offs in the use of funds.

It should be emphasized that the program and performance monitoring reports are produced at the end of each biennium with a focus on the **actual** accomplishments and performance of the just completed biennial program. The program evaluation function described earlier focuses on the **expected** accomplishments of the next proposed biennial program.

Figure 3.5 illustrates the timing of program development, evaluation and monitoring activities. In any given biennium, the current biennium program will be implemented and monitored while the program for the next biennium is being developed. Program monitoring involves tracking of accomplishments versus plans, whereas performance monitoring looks at "snapshots" of system conditions and performance over time, as the program is implemented. (These snapshots will actually reflect the cumulative impacts of previous programs as well as exogenous factors). As shown in the figure, the program and performance monitoring reports produced for the Biennium 1 program are used to provide input to the development of programs in the next two biennia. Information on the

Figure 3.5 Relationship of Program Evaluation and Program/Performance Monitoring





actual benefits and costs of a completed program can greatly assist later program evaluation trade-offs.

Interjurisdictional Coordination Recommendations

In addition to recommendations related to various elements of the programming process, several other changes to the current programming process are recommended to enhance interjurisdictional coordination:

1. Make the six-year program project specific for all major types of improvements (i.e., for most projects in the preservation and improvement programs), with explicit recognition that projects in years 3-6 of the program are subject to change.

Currently the program identifies specific projects for the first two years and represents a financial plan for next four years. However, HB 2140 requires other state agencies to adopt six-year programs like WSDOT, and the Growth Management Act may require the six-year programs of local jurisdictions to be "revenue constrained." Both of these measures may focus attention on the appropriate format for the state's transportation program. The objectives of having specific projects identified in years 3-6 of the program are to:

- Recognize that many projects have lead times much greater than two years.
- Strengthen WSDOT Program Management capabilities by allowing for analysis of program options and trade-offs over an expanded time horizon.
- Improve communication and accountability on program contents and expected accomplishments;
- Improve the WSDOT's ability to coordinate project decisions with local jurisdictions by providing as much lead time as possible; and
- Improve the WSDOT's ability to demonstrate compliance with Clean Air Act and Growth Management Act requirements.

This recommendation should not have the effect of reducing programming flexibility or responsiveness to changing conditions. It must be recognized that some types of projects cannot be scheduled more than one or two years in advance and that projects scheduled in years 3-6 may be changed as the next biennial budget and six-year program are developed.

2. Improve coordination of state-local programming cycles and project schedules.

For state funded capacity and operational improvement projects, a mechanism should be developed to allow adjustments in the state program during a biennium to reflect changes in local priorities, local funding availability or local project status. Changes in these factors may affect any local project, including those funded through the Transportation Improvement Board or County Road Administration Board programs. The objective of this recommendation is to avoid delays in implementation of high priority projects once local budgeting processes have determined matching fund availability. Due to differences in budget cycles, local funding arrangements are sometimes not completed in time for projects to be included in biennial programs.

3. Allow increased flexibility to maximize effectiveness of state resources by:
 - Developing an explicit mechanism to recognize improvements on the state highway system that represent the most cost-effective solution to local problems while still reflecting overall state priorities; and
 - Allowing state funds to be spent on local roads when that represents the most cost-effective solution for a priority problem on the state highway system.
4. Strengthen opportunities for local jurisdictions to provide input to the state program development process in the policy setting (State Transportation Policy Plan), system planning, project identification and scoping and priority setting stages.

Specific steps might include:

- Annual meetings between the districts and local jurisdictions to discuss joint project opportunities.
- Development of clear guidelines on procedures by which local jurisdictions may propose joint projects to WSDOT for consideration.
- Ensuring consistency between WSDOT route development plans and regional transportation plans.

■ 3.3 Comparison of Existing and Proposed Process

As discussed earlier, the proposed changes to the existing programming process are designed to accomplish three key objectives:

- To reflect the full range of policies included in the State Transportation Policy Plan,
- Highlight the key trade-offs and choices confronting the state in terms of transportation investments, and
- Improve the accountability of the programming process.

In addition, other questions have been raised concerning how the proposed programming process would address such issues as:

- Fiscal/budgetary control;
- Program oversight; and
- Ensuring objective project priority decisions.

Table 3.5 summarizes how the existing process and the proposed new process address each of these issues.

■ 3.4 Decision-Making Roles

A summary of the key decision-making roles of various groups involved in program decisions is shown in Figure 3.6. The information presented reflects the proposed new process, though for some activities (e.g., Program Allocation), there is no change implied in the roles now played in the existing process. Each program element is discussed below:

- **Policy Guidelines.** A key element of the proposed new process is to reflect the full range of policy issues identified in the State Transportation Policy Plan. All the groups identified in Figure 3.6 participate in the development of this plan. In addition, it is recommended that the Commission and WSDOT review proposed policy guidelines with the Legislature and Governor and obtain their approval of proposed policy objectives, program performance measures and project evaluation criteria (i.e., criteria for assigning priorities). A summary of the policy directions and program goals to be used to guide the development of the next biennial program and budget should be developed by the

Table 3.5 Comparison of Existing and Proposed New Process

Objective/Issue	Existing Process	Proposed New Process
1. Reflect full range of policies in the policy plans	<ul style="list-style-type: none"> • Statute clearly identifies preservation and accident reduction as the primary concerns, and lists evaluation factors that reflect general transportation service objectives. • Other policy goals in State Transportation Policy Plan and new legislation (e.g., Growth Management) are not explicitly reflected. 	<ul style="list-style-type: none"> • Revised statute reflecting full range of policy concerns and defining basic requirements for programming process. • Require that WSDOT and Commission produce a policy guidelines document defining basic policy directions to be reflected in biennial programs at the beginning of each program development cycle. • Broaden the range of needs criteria and project/program evaluation criteria to reflect all policy concerns. • Strengthen the tie to the new Commission/WSDOT system planning process as a mechanism to help examine alternative service objectives and policy goals. • Encourage consideration of broad range of transportation solutions by project evaluation criteria which emphasize both mobility of people and goods and the benefits or output of projects.
2. Highlight key trade-offs	<ul style="list-style-type: none"> • Current process reflects a relatively static policy framework as prescribed by current statute and does not emphasize examination of trade-offs. • Needs models reflect a fixed set of solutions systemwide, and are not easily changed. 	<ul style="list-style-type: none"> • Redefine and simplify program categories and sub-categories. • Define specific objectives, explicitly estimate program accomplishments against objectives and monitor results. • Explicitly evaluate different condition levels for preservation objective.

**Table 3.5 Comparison of Existing and Proposed New Process
(continued)**

Objective/Issue	Existing Process	Proposed New Process
2. Highlight key trade-offs (continued)		<ul style="list-style-type: none"> • Together with system planning process, assess implications of alternative service objectives for the improvement category and the implications of shifting funds between subcategories in the improvement program. • Allow shifts of funds between program categories reflecting the results of program evaluations and policy concerns.
3. Improve accountability of process by defining explicit objectives and measuring accomplishments	<ul style="list-style-type: none"> • No explicit mechanism is in place to measure program accomplishments against goals. 	<ul style="list-style-type: none"> • Simplify and clarify the program structure to better reflect policy objectives. • Define explicit and consistent objectives, and program and system performance monitoring measures. • Require explicit program and performance monitoring report each biennium, which evaluates program delivery and accomplishments.
4. Fiscal/budgeting control	<ul style="list-style-type: none"> • Accomplished through the following steps: <ul style="list-style-type: none"> - Specification of program categories, needs models, and program category funding priorities. - Review and approval of final biennial budget by Governor and Legislature. 	<ul style="list-style-type: none"> • Proposed to have the following steps: <ul style="list-style-type: none"> - Specification of program categories and needs analysis criteria. - Explicit definition of program objectives, program and system performance criteria and reporting requirements. - Review and approval of final biennial budget.

**Table 3.5 Comparison of Existing and Proposed New Process
(continued)**

Objective/Issue	Existing Process	Proposed New Process
5. Program Oversight	<ul style="list-style-type: none"> • Accomplished through the following steps: <ul style="list-style-type: none"> - Definition of basic elements of process in statute. - Biennial budget approval process. 	<ul style="list-style-type: none"> • Proposed to have the following steps: <ul style="list-style-type: none"> - Definition of basic elements of process in statute. - Review of key policy directions document each biennium. - Specific measurable objectives defined for each key policy issue. - Analysis of program/ policy options. - Review of program and performance monitoring reports each biennium. - Biennial budget approval process.
6. Ensure objective project priority decisions	<ul style="list-style-type: none"> • Results in explicit priority array and ranking procedure. 	<ul style="list-style-type: none"> • Results in explicit priority array and ranking procedures (reflecting a broader range of evaluation factors). • Employs consistent criteria for defining needs and identifying projects.

Figure 3.6 Program Decisions – Recommended Roles in New Process

Element	Policy Guidelines	Planning Process	Project Identification	Project Evaluation/ Ranking	Program Evaluation	Program Allocation	Program and Performance Monitoring
Participants	WSDOT TIB/CRAB Regional/local governments Governor Legislature Transportation Commission LTC	WSDOT Regional/local governments Transportation Commission Citizens	WSDOT Regional/local governments Citizens	WSDOT Regional/local governments TIB/CRAB	WSDOT Commission	WSDOT Governor Legislature Regional/local governments TIB/CRAB	WSDOT Commission
Manager	WSDOT	WSDOT	WSDOT	WSDOT	WSDOT	WSDOT	WSDOT
Approval	Transportation Commission Legislature Governor	Commission RTPO/MPO	WSDOT	Commission	Commission	Commission Legislature Governor	Commission
Product	Policy goals/objectives Performance measures Project evaluation criteria	Systems plan Needs analysis Identification of problems/solutions	Project scope with schedule and budget	6 year program Biennial budget proposal	Program impacts and tradeoffs	Final biennial budget and program	Program monitoring and delivery report Performance monitoring report

Commission and WSDOT during the mid year of the current biennium for review by the Legislature and Governor. It is not anticipated that the policy direction will change every biennium, but an opportunity to reaffirm key policy directions should be provided.

- **Planning Process.** The Commission and WSDOT's proposed new system planing process needs to provide key inputs to programming in terms of regional transportation system plans, needs analysis and identification of potential projects. However, these inputs must reflect the policy objectives and program performance and project priority criteria established in the policy guidelines. In addition, needs and project identification criteria must be consistent and reflect a range of explicitly defined engineering and technical factors as well as policy factors in defining deficiencies and potential solutions. Regional agencies and local governments will need to participate in this planning process and consistency with regional and local plans must be a key evaluation criteria for proposed projects.
- **Project Identification.** Decisions on the appropriate project scope (design and level of improvement), schedule and budget must reflect a number of perspectives and input from the participants listed. However, WSDOT must ultimately make recommendations to the Commission on the appropriate project scope.
- **Project Evaluation/Ranking.** As discussed above under Policy Guidelines, explicit criteria for project evaluation and ranking must be developed by the Commission and WSDOT and approved by the Legislature and Governor. Working with other groups, as shown, WSDOT must use these criteria (which will be different for different program categories or subcategories) to establish project priorities and develop candidate biennial and six-year programs. The final project evaluation and ranking results must be reviewed and approved by the Commission.
- **Program Evaluation.** The expected impacts of the proposed program and trade-offs implied by shifting funds between program categories or subcategories should be explicitly documented. The Commission and WSDOT must take lead responsibility for performing this evaluation, but the results of this activity will provide critical input to program allocation decisions.
- **Program Allocation.** A number of groups are involved in developing the proposed biennial program and budget. The Commission will recommend a final allocation, but the final decisions on program allocations will continue to be made by the Legislature and Governor in the biennial budget process.

- **Program and Performance Monitoring.** While a specific decision or approval is not required at this stage of the process, it is recommended that program and performance monitoring reports be produced each biennium to hold the programming process accountable by documenting accomplishments and the extent to which established objectives are being met. The performance measures to be used should reflect policy objectives and should be approved by the Legislature and Governor as discussed earlier under Policy Guidelines.

4.0 Implementation Process

4.0 Implementation Process

■ 4.1 Legislative Changes

The recommendations will require some changes to existing statutes that define the existing programming process. It is recommended that current statutes be changed in the following areas:

Policy

- Require explicit documentation of policy direction and objectives at the start of the biennial program development cycle;
- Incorporate references to other statutes which will have a bearing on the development of the biennial program, such as growth management, the Clean Air Act and transportation demand management.

Program Structure

- Revise the program category definitions.

Program Accountability

- Require an explicit program and performance monitoring report for each biennium.

Program Trade-off Issues

Require WSDOT to document trade-off issues which they have examined and provide an explanation of the reason for selecting the proposed program, including policy conflicts, investment in system preservation versus system improvement and between various elements of system improvements.

Program Development Process

- Continue to require WSDOT to use good programming practices including:
 - Preparation of a biennial program and updated six-year program;
 - Definition of explicit policy objectives;
 - Development of specific programmed project evaluation criteria;
 - Use of consistent and objective project evaluation and priority ranking methods; and
 - Preparation of a program development manual documenting all procedures and criteria to be used in developing the biennial program.

The legislation also could include the general policy issues of concern and the general priority or evaluation factors to be considered, but it is not recommended that specific criteria or weights be specified. Similarly, while the importance of the system preservation objective should continue to be stressed, the statute should require the Commission and WSDOT to explicitly document the condition levels that the preservation program is designed to achieve, but not specify a final priority for allocating funds to various program categories.

■ 4.2 Administrative Changes

The vast majority of the recommendations can be accomplished through administrative changes to the Commission's and WDOT's process and procedures for developing a program. These changes can include:

- Development of new program and system performance measures,
- Use of a broader set of project evaluation and priority criteria,
- Revised priority criteria and ranking procedures,
- Revised needs and project identification criteria,
- Modified needs models,
- New program development procedures for districts and central office staff,
- Strengthened ties to the new system planning process including, as appropriate, some of the products of that effort directly in the programming process.

All administrative procedures related to programming should be documented in a program development manual.

■ 4.3 Next Steps and Schedule

As part of the development of recommendations, the study team was directed to develop a summary implementation schedule and strategy to provide some indication of the steps and time required to implement the proposed changes.

Figure 4.1 defines a series of implementation steps and a very preliminary schedule for accomplishing them. Obviously a more detailed strategy and schedule will need to be developed once a decision on the recommendations has been made.

The implementation strategy focuses on the steps required to accomplish the proposed changes to the programming process. It does not at this point reflect careful coordination with the implementation timing for WSDOT's new system planning process (though such coordination is not expected to present any difficulties), nor does it reflect any changes that

Figure 4.1 Implementation Process

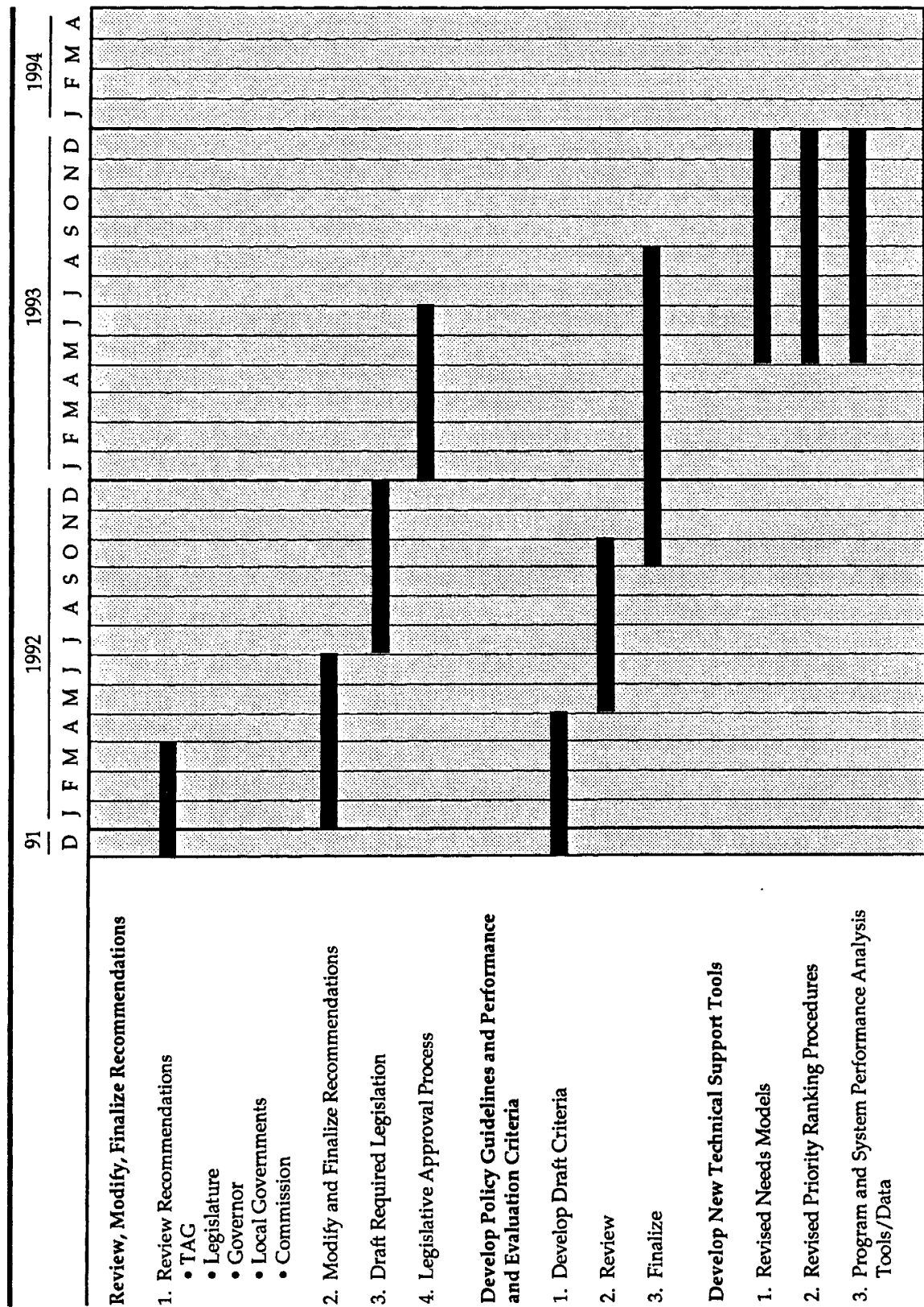
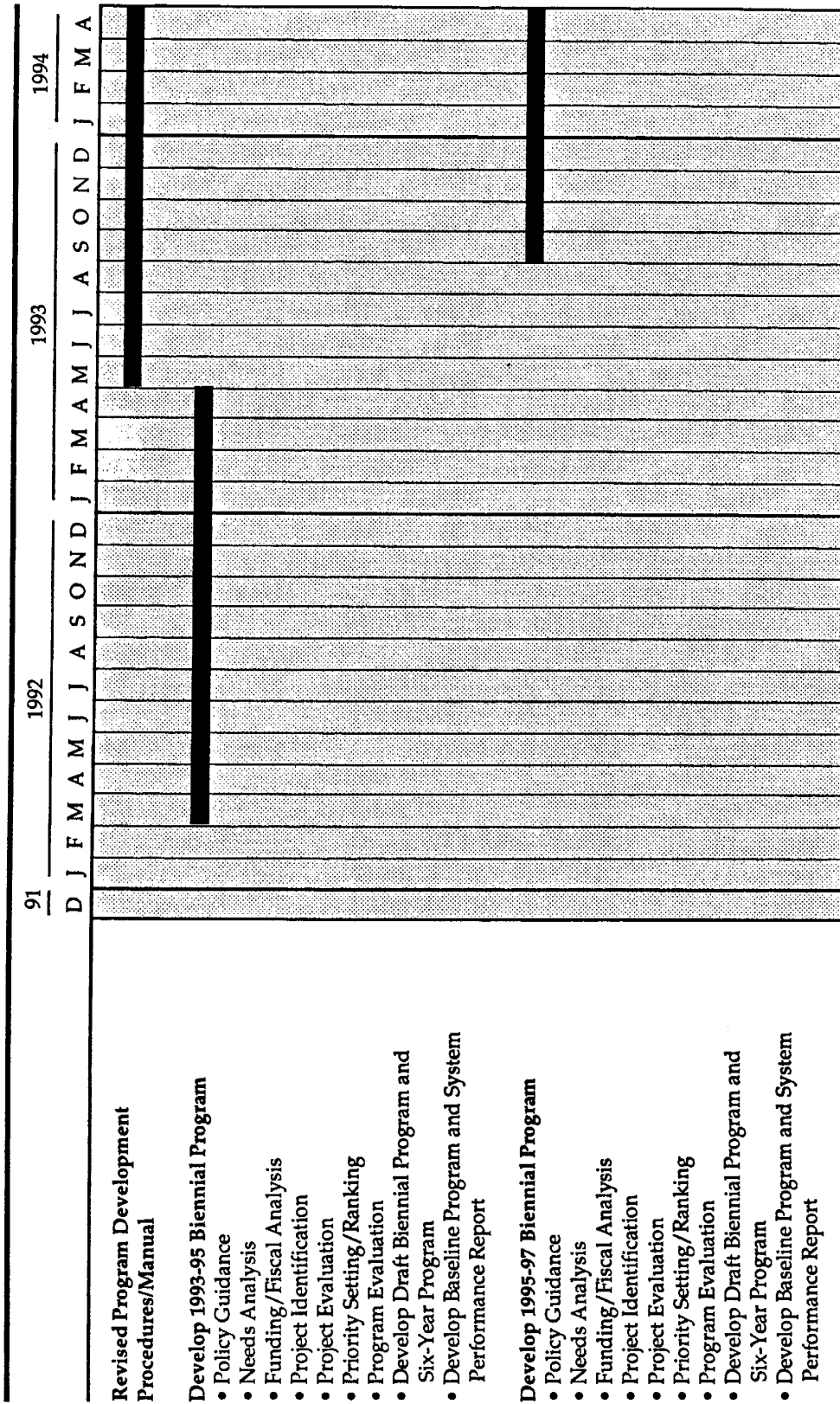


Figure 4.1 Implementation Process (continued)



may be necessary to WSDOT's accounting or financial management procedures. Again, such changes will need to be reflected in a more detailed implementation strategy after detailed review with appropriate WSDOT staff.

A summary of the major implementation activities is provided below:

- **Review, Modify and Finalize Recommendations.** Clearly the key activity over the next few months will be to review the proposed changes with many groups that, while having representatives on the Subcommittee, need an opportunity to review the recommendations. Based on those reviews, additional modifications or clarifications may be necessary before the recommendations can be finalized. Depending on the nature of the final recommendations, legislative changes may be required to provide a new framework for programming. The schedules for all these steps may need to be changed to reflect the priorities and schedules of all the groups to be involved in the review process, but the intent is to submit the required legislation for the next session of the Legislature (beginning in the fall of 1992). A summary of the aspects of the recommendations that may need to be reflected in the statute are summarized in Section 4.1.
- **Develop Policy Guidelines and Performance and Evaluation Criteria.** This step involves detailed specification of the program and system performance measures to be used (reflecting specific policy objectives) and the project evaluation criteria to be used in setting priorities. These would be linked to service objectives established in the new system planning process. This step is shown concurrent with the first step since it is anticipated that definition of the specific measures and criteria will be an important part of the final review and approval process and must reflect both the information needs of decision-makers and the data and technical capabilities of WSDOT.
- **Develop New Technical Support Tools.** Revised needs models (or analysis approaches), priority criteria and ranking procedures (similar to the existing approach, but using a broader range of criteria) and the analysis capabilities used to generate program and system performance reports must be developed and implemented within WSDOT as the new process is being introduced.
- **Revised Program Development Procedures/Manual.** While not absolutely essential, it is strongly recommended that the Commission and WSDOT develop an explicit program manual that documents all the steps, criteria and procedures to be used in developing the program. Such manuals have been produced by other states to provide a clear and concise summary of the programming process, including a description of procedures and key assumptions. A program manual may be used

both within WSDOT in guiding programming activities and to provide others with a vehicle to review these procedures.

- **Develop Biennial Programs.** A series of steps that must be accomplished to produce biennial programs (and updated six-year programs) for 1993-1995 and 1995-1997 are shown. Specific schedules for each step are not shown. Clearly if the program for the 1993-1995 biennium is going to begin to reflect the recommendations, a carefully coordinated schedule and strategy for each step in developing the 1993-1995 program must be developed by very early in 1992. If the recommendations were finalized and approved by early 1992, some of the changes could be reflected in the next biennium. In any case, all of the recommended changes could be fully implemented in time to reflect them in the 1995-1997 biennial program.